CHAPTER 1 - CRITERIA AND BENCHMARKS

In 2000, the Louisiana Department of Transportation and Development (LaDOTD) initiated an update of the 1992 *Louisiana Airport System Plan (LASP).* Since completion of the 1992 study, conditions in Louisiana and in the air transportation industry have changed; these changes warrant an update of the plan. There are two primary purposes for the plan update:

- To identify and analyze the aviation assets and needs of the State to assure that aviation properly performs its role to support Louisiana's economy and its citizens; and

- To provide continued guidance for development of a system of airports that meets the State's existing and future air transportation needs.

System plans examine airports on a macro level. The 2002 LASP provides a general assessment of aviation needs within the State. This study provides a blueprint for future airport-specific planning that may be undertaken for airports throughout Louisiana. Individual airport planning takes place in the form of an airport master plan or airport layout plan (ALP).

The LASP is comprised of a series of steps, the first of which is to identify a set of system measurement criteria that characterize an adequate airport system for Louisiana, and then to establish a vision for development of the system. Measurements will be identified to evaluate the adequacy of the State's airport system from a qualitative and quantitative standpoint. The measurements will be used to evaluate the system's performance and to develop specific benchmarks or targets to evaluate and guide the development of the system. Options for resolving system deficiencies will focus on meeting identified targets. Finally, a recommended plan will be developed to provide guidance on the airports and facilities that are needed to meet target benchmarks, and specific actions will be identified to direct the implementation of the recommended plan.

Subsequent chapters of the LASP include the following:

- Inventory
- Forecasts
- Adequacy and Deficiencies Analysis
- Options Analysis
- Recommended Plan

DEMAND MEASUREMENT

For this study, measurement of the Louisiana airport system was completed using a two-pronged approach. First, existing demand for aviation services requires measurement. Second, through the evaluation of demand for aviation services, airport requirements are established.

Demand for aviation services is influenced by factors that are related to aviation, and also by factors that are unrelated to aviation. It was determined that both aviation and non-aviation factors should be considered in order to achieve a balance in evaluating airport needs throughout the State. Data were evaluated for their availability and reliability to provide sufficient detail to support comparison of the various demand factors.

Demand factors were identified through meetings with the Department staff, review of other similar studies, review of the 1992 LASP, and research of available data sources.

The evaluation of the demand factors will provide an analysis of the need for airport facilities throughout the State. Once demand is measured, the existing roles of the airports will be examined and a stratification of existing airports conducted. This stratification will set a baseline for analysis of the State's airport system. As additional data on demand factors is available and the need for the re-evaluation of airport roles determined, the stratification of the airport system can be retraced to determine if airport role changes are necessary based on changes in demand.

While information was sought at the community level for each of the demand factors, some data were only available at the county level. Demand factors will be evaluated in a subsequent chapter.

SYSTEM PERFORMANCE MEASUREMENT

Once the demand for aviation services is identified, the existing system's performance and ability to meet this demand is evaluated. Evaluation of the system's performance requires development of ***goals*** and ***objectives*** for the airport system. Goals are defined as conditions to be achieved, but are not specific in nature so as to develop a process to achieve them. Goals or criteria are the major categories considered to be important for analyzing an airport system. Objectives are used as the measurement tools to define goals in a quantifiable manner. Objectives are referred to in this study as measurements. Each measurement is analyzed to determine how the Louisiana aviation system is performing.

The process to establish system goals or performance criteria was based initially on the 1992 study and FAA guidelines; the process was supplemented through the review of performance criteria used by other states and planning agencies.

Goals from the 1992 LASP included the following:

- Provide a system that is safe for all aviation users;
- Provide adequate access by air to the population and economic activity centers of the State;
- Provide adequate access by air to the State's growing tourism, aviation, and aeronautical industries;
- Maximize the opportunity for growth in international trade and travel, particularly with Central and South America;
- Maximize the economic benefits and return on investment to the State from development of the airport system;
- Minimize adverse impacts on the environment; and
- Integrate the airport system effectively with other transportation systems, thereby providing an efficient multimodal transportation system.

Objectives from the 1992 LASP included the following:

- Provide airports capable of supporting commercial service within a 60-minute drive of significant population centers;
- Provide airports capable of supporting business jet aircraft and single- and twin-engine piston-powered aircraft within a 30-minute drive of significant population and mineral resource centers; and provides airports capable of supporting economic activity generated by urban development;
- Provide airports capable of supporting single-and twin-engine piston-powered aircraft within a 30-minute drive of significant agricultural resource centers;
- Meet federal and State safety standards; and
- Provide an airport system developed to applicable federal and State design standards.

These goals and objectives were considered as part of this Update, but were condensed into overall categories that are used in this study's analysis of the Louisiana Airport System.

Initially, three major goals or performance criteria categories were identified to describe the general characteristics that define a good aviation system. The three general system performance criteria/goal categories that were established through this process included the following:

- Access
- Economic
- Physical

These goal or performance criteria will be used in subsequent chapters to measure the system's performance. Airport functional levels that are reflective of each airport's role in the State Airport System will also be determined through this process.

The performance categories and the specific measurements/objectives for each are described in the following sections.

Access

Providing adequate access is an important goal for Louisiana's airport system. Accessibility to an airport can be defined in terms of access from both the ground and the air. Air access relates to a number of factors, including the ability to access airports during all weather conditions and the location of airports to respond to air emergencies. Ground access is usually defined in terms of the time it takes for an aviation user to reach an airport. Airports must be accessible via the road network and must be located in proximity to users. The FAA, through the National Plan of Integrated Airport Systems (NPIAS), has established guidelines that can be used to evaluate the accessibility of airports.

Specific measurements that will be analyzed for the Louisiana airport system in terms of accessibility include:

- Airports serving population centers
- Airports accommodating medical flights

- All-weather coverage to airports throughout the State

Economic

An important goal of an airport system is to support the economic growth and diversification of a state or regional economy. It is now widely recognized that airports are not just about transportation. Travel by air is essential with the movement toward a global economy. As economies in Louisiana continue to change and evolve, the airport system should support the State, local, and regional economies in terms of providing adequate facilities and services. In addition, local financial resources should be available to support the airport as it is improved to meet economic objectives and needs.

Economic measurements that will be examined as part of the evaluation process include:

- Airports to serve economic/trade centers
- Airports to meet air cargo needs (freight and mail)
- Airports to meet agricultural needs

Physical

An important goal of any aviation system is to provide physical facilities to meet the needs of the users. The mission of airports is to provide quick, convenient, and safe transportation of people and goods. An adequate airport system needs certain facilities to process the movement and storage of aircraft and to meet the needs of the people who use airports.

Physical performance of the aviation system is determined by examining the ability of the airports to meet at least minimum standards. Minimum standards can be defined in terms of facilities and services and will be defined separately for the various airport functional levels and associated airport roles that are identified for the Louisiana aviation system. Providing a system of airports that can serve varying types and volumes of aviation demand is an important evaluation factor in determining the performance of the system.

The measurements/objectives that will be examined related to physical performance of the system include:

- Airports meeting minimum facility and service standards
- Airports meeting FAA operational facility guidelines
- Airports with adequate PCI ratings

CHAPTER 2 - INVENTORY

The purpose of the inventory chapter is to provide relevant information about the 71 surveyed airports currently identified by the Louisiana Department of Transportation and Development (LaDOTD) as a part of the Louisiana Airport System. Data for all 71 airports is provided in an organized tabular format for further evaluation and review within this chapter.

According to the FAA 5010 Airport Master Record database, there are 82 airports listed as public airports in the State; however, for the purpose of this study, the count of 71 airports established a benchmark for evaluation of the Airport System Plan. Airports in the study range in size from single turf runway airports to larger airports with multi-runway systems and commercial passenger and cargo traffic. The inventory compilation was completed with Action Plan information, Airport Inspection Data (FAA 5010), and an 11-page survey developed and administered as part of the LASP. A comprehensive database of information, which can be queried for further planning analysis, was also developed with data compiled during the study.

INVENTORY PROCESS

In order to provide a comprehensive inventory of all airports, a standard survey was developed and distributed to all airports in the State. This survey contained information related to specific activities and operational requirements at each airport. It was initially populated with data from the FAA 5010 Airport Master Record, and supplemented with data from Airport Action Plans developed by LaDOTD. Each airport manager or sponsor then validated or corrected the information contained on the form, and provided additional information and comments, as necessary.

For the purpose of reporting the information gathered through the survey, each of the tables depicts the airports in alphabetical order, according to the FAA's classification system. The classifications included:

Primary Commercial (PC) – A commercial service airport determined to have 0.01 percent or more of the nation's total number of enplaned passengers. There are seven airports in the Louisiana Airport System that are classified as primary commercial. These airports are further categorized by the size of hub. A hub airport is identified as a very active commercial service airport. There are four basic categories of hub airports: Large Hub, Medium Hub, Small Hub, and Non-Hub. Each airport large enough to be considered for this category must meet the following requirements:

Large Hub Airports that enplane at least 1.0 percent of the total enplaned passengers in the nation

Medium Hub Airports that enplane a minimum of 0.25 percent to 1.0 percent of the nation's total enplaned passengers

Small Hub Airport that enplane less than 0.25 percent of the nation's total enplaned passengers, but more than 0.05 percent

Non-Hub - Airports enplaning less than 0.05 percent of the total enplaned passengers in the nation

Reliever (RL) – Airports designated as having the function of relieving congestion at commercial service airports by providing more general aviation access to the overall community. The Louisiana Aviation System currently has five airports that meet this designation.

General Aviation (GA) – Airports providing general private/leisure flying services. These facilities are considered to be an integral part of the national air transportation system. The remaining 59 airports are referred to as GA according to FAA classifications.

GENERAL INFORMATION

The first section of the survey provided information on each airport's ownership, as well as information on the most recent planning documents completed for each airport. **Table 2-1** identifies the airport name, its associated city, ownership designation, and airport identifier. For the purpose of this study, all airports were public airports and designated by the abbreviation "PU." If the airport is included in the National Plan of Integrated Airport Systems (NPIAS), an associated identification number is included. The NPIAS is the national plan submitted to Congress every five years identifying information about airports that are significant to the national air transportation system. This plan also identifies those airports in the State of Louisiana that are eligible for federal funding.

Table 2-2 provides contact information for each airport participating in the survey. Initial information was collected from the FAA 5010 form, with corrections generated from returned surveys.

Table 2-3 contains information regarding the existence of any airport plans, such as Air Service/Market Analysis Studies, Airport Layout Plans, Airport Master/Action Plans, Annual Budgets, and Business Plans. The last year a particular report was produced is also shown.

Table 2-4 is a continuation of Table 2-3, and provides information on other airport plans, such as Capacity Enhancement Studies, Cargo Studies, Economic Impact Studies, and/or Industrial Park Studies.

Table 2-5 is a continuation of Tables 2-3 and 2-4, and provides airport plan information on Marketing Brochures and Videos, Rates/Charges Studies, and Activity Forecasts.

ACTIVITY STATISTICS

Airport activity and based aircraft information, along with other key activity statistics, form the foundation on which statewide growth trend analysis will be conducted. This section of the inventory provides key measurements of activities occurring at each airport, as well as information on capacity constraints and needs for enhancements to meet future growth trends.

Table 2-6 provides activity information at each airport. Each airport is shown twice; the first line shows information directly from the latest FAA 5010 form, and the second line was filled in by each airport with more recent information. This table includes annual estimated average operations and operations per day that is not included in the FAA 5010 data form, but was a question on the survey. Air taxi operations, commercial operations, local GA operations, military transient and general aviation operations are all numbers from the FAA 5010 data, followed by updated information from the survey. This table also includes information on the last date each airport was inspected for the FAA 5010 form.

Table 2-7 summarizes total aircraft operations and total based aircraft by airport. This table also separates the information received from the airport sponsor and from the FAA 5010 data for total aircraft operations.

Table 2-8 summarizes airport activity levels as either increasing/decreasing or maintaining the same levels from prior years. It also provides peak month and peak hour activity level information.

Table 2-9 contains information regarding types of common activities at airports, including business flying, flight training, agricultural use, recreational flying, or other. The tables also provide a percentage of each use.

Table 2-10 provides a summary of operations related to general aviation activity at each airport in the study. Categories include single-engine, multi-engine, jet, helicopter, and other.

Table 2-11 provides a summary of individual aircraft regularly operating at each airport. The table shows aircraft type, make, and activity, along with information regarding waiting lists for aircraft storage.

Table 2-12 summarizes the types of aircraft based at each airport, and delineates the number of aircraft on tie-downs, in T-hangars, and those housed in conventional hangars.

Table 2-13 provides a five-year passenger total enplanement history by airport.

FACILITIES

This section of the survey provides information related to physical features of the airports, which will be useful when correlated with the activity statistics section. Information from this section will be used in the analysis of current and future facility needs.

Table 2-14 provides a listing of the primary runway, the secondary runway, and any additional runways, and includes information on orientation, length and width, strength, pavement condition, and lighting.

Table 2-15 is a continuation of the format of Table 2-14, with displaced runway threshold information, taxiway type, and taxiway width.

Table 2-16 provides taxiway pavement conditions, the number of taxiway exits, spacing between exits, and taxiway lighting.

Table 2-17 contains information related to airfield elevation, if the elevation is surveyed or estimated, the mean temperature of the hottest month of the year, and whether or not the airport conducts "through-the-fence" operations.

Table 2-18 provides information regarding occupied areas by air carrier, general aviation, and administration spaces on each airport. Total number of gates and the number of paved and unpaved tie-downs are also listed in this table.

Table 2-19 provides hangar information for each airport, listing total T-Hangar units, conventional hangar square footage, and total number of portable storage units.

Table 2-20 summarizes vehicle-parking capacity for air carrier patrons, general aviation patrons, rental car parking, and employee parking.

Table 2-21 contains information for each airport about annual fuel flowage for the year 2000, including total fuel usage, and totals by category of fuel.

Table 2-22 summarizes fuel facility information by airport, including type of fuel, number of tanks, if they are above or below ground, total capacity of the tanks, and what method of distribution is used.

Table 2-23 provides information related to airport aprons, such as location, size, pavement type/condition, and use.

Table 2-24 provides air cargo facility information by airport, including existing cargo space, planned cargo space, what year planned cargo space may be constructed, existing cargo apron, planned cargo apron, and what year planned cargo apron may be constructed.

AIRSPACE AND NAVIGATIONAL AIDS (NAVAIDS)

This section of the inventory provides information related to navigational aids (NAVAIDs) available at each of the study airports throughout the State. **Tables 2-25**, **2-26**, and **2-27** summarize the types and availability of NAVAIDs associated with each runway at the airports.

Items in this table are delineated by runway and include NAVAIDs such as Precision Approach Path Indicators (PAPI), Visual Approach Slope Indicators (VASI), Generic Visual Guidance Indicators (GVGI), Runway End Identifier Lights (REIL), Instrument Landing System (ILS), Approach Lighting System (ALS), Distance Measuring Equipment (DME), Localizer (LOC), Very High Omni Directional Approach (VOR), Global Positioning Approach (GPS), and Non-directional Beacon Approach (NDB). The table also indicates if the airport has a circling approach, and if there is a significant change in runway centerline elevation.

Table 2-28 summarizes NAVAIDs that are present at each airport, but not associated with any specific runway. This table delineates the beacon intensity, beacon size, the presence of wind cones, the number of wind cones, the presence of segmented circles, the weather-reporting capabilities, and other navigational aids at each airport.

AIRPORT USERS AND SERVICES

This section of the inventory provides pertinent information on the users of each airport, including both aeronautical and non-aeronautical users. This information will be useful in assessing statewide demand for airport facilities and services.

Table 2-29 summarizes all airport users and off-airport dependent businesses. It lists these businesses by firm name, what type of associated aircraft is based at the airport, a contact name and phone information, and if the business is based at the airport.

Table 2-30 shows information regarding scheduled air carrier service, commuter air services, charter services, and air taxi operations. Hangar rental and tiedown information is also provided.

Table 2-31 provides further airport services information, including aircraft rental, aircraft sales, flight instruction, jet fuel, Av Gas, and industrial park availability.

Table 2-32 provides additional information regarding avionics repair, avionics sales, U.S. Customs services, public phones, restaurants, and vending machine availability.

Table 2-33 contains additional information, such as aircraft repair, car rental, skydiving, Foreign Trade Zone, FAA Written Test Center, and if a loaner car option is available.

Table 2-34 summarizes the results of the question within the survey regarding other services and any description of other services. Only three airports provided a response; however, all airports and responses are listed.

Table 2-35 provides responses to certain functions that occur on each airport, including recreational flying, agricultural spraying, corporate/business activities, aerial inspections, shipping of "Just-In-Time" perishables, and whether the airport serves as a gateway for resort visitors (and rated on a scale of low to high activity).

Table 2-36 summarizes various aviation activities, on a scale of low to high activity, and includes information such as staging area for community events, police/law enforcement activity, prisoner transport, location for community facilities, career training and education, and search and rescue patrol.

Table 2-37 provides additional activity information, such as environmental patrol, emergency medical evacuation, medial shipments, patient transfers, forest firefighting, aerial photography, surveying, and real estate tours. Each component is identified with low to high activity levels.

Table 2-38 provides activity information regarding aerial advertising/banner towing, traffic/news, and air shows (these items are also summarized on a scale of low activity to high activity).

AIRPORT FUNDING

This section addresses funding issues and development challenges faced by airports in the State.

Table 2-39 summarizes responses to questions that were asked within the survey regarding funding. The questions included the following:

- Does the airport receive monies from local sponsor
- Is there an annual allotment for operations
- What is the annual allotment
- Does the airport receive monies form local sponsor for capital projects
- How much was allocated to the airport last year

Tables 2-40 through **2-42** continue to chart responses from the airports to specific questions regarding development issues and challenges at each airport, such as the following:

- List any constraints to future airport plans and any landside access
- Describe adjacent land use/zoning
- Is airport land use/height/hazard zoning in place in airport-impacted municipalities
- Describe any current airport improvements underway
- Describe any local laws/ordinances/policies that could affect airport operations and/or growth

SUMMARY

As stated throughout this chapter, the information collected and summarized in each of the tables will be used for further analysis to formulate recommendations for the Louisiana Airport System Plan Update.

CHAPTER 3 - AVIATION TRENDS

In preparing a comprehensive statewide plan for the public-use airports in the Louisiana system, it is important to have a general understanding of recent and anticipated trends in the aviation industry as a whole. When these trends are considered, it is important to review factors that could impact the use of commercial service and general aviation. Some trends in the aviation industry will undoubtedly have a greater impact on Louisiana than others; and, in fact, it is possible that some trends that are anticipated and discussed in this chapter may have no pronounced impact on the State's aviation environment.

Trends in the commercial airline industry could substantially impact air service in Louisiana, particularly as they relate to how the State's demand for commercial airline travel will be served in the future. Trends in general aviation are also important to consider since almost every airport in the Louisiana system, even the air carrier airports, accommodates some segment of general aviation activity. Furthermore, the vast majority of Louisiana airports support only general aviation aircraft operations. Having an understanding of the general aviation industry is important to considering the future demand for this component of the industry. Included in this examination of general aviation trends will be a discussion of changing patterns in the business use of general aviation aircraft.

Trends presented in this chapter are generally for the U.S. as a whole, and are intended to provide a general frame of reference for the reader of this report. The trends analysis sets the stage for an understanding of how aviation activity in Louisiana compares to aviation in the country, and it establishes a basis for predicting how aviation may be expected to grow and change in the future. Having this frame of reference is essential to identifying viable alternatives for improving Louisiana's airport system.

Historical trends in total statewide based aircraft, operations, and enplanements are also provided in this chapter. This presentation helps to show how demand has changed or shifted throughout the State. For airport specific data, please consult that airport's master plan, action plan, or airport layout plan (ALP).

RECENT COMMERCIAL TRENDS

The airline industry operates in a perpetual state of adjustment and change. During the last 20 years, the United States has experienced unprecedented expansion of air carrier capacity and large investments by carriers to control the flow of traffic through networks of hub airports. In various markets, there have been documented skirmishes between the major carriers and new entrants. Where competition prevailed, air passengers reaped the rewards of low airfares. At single-carrier hubs and local airports, passengers paid, on average, much higher fares. In the 1990s, the carriers lost billions of dollars. Those losses had a profound effect on the way airlines subsequently operated. Some of the most dramatic changes that occurred included the sudden and complete shutdown of several hub operations and the demise of several flagship carriers, notably Eastern Airlines, Braniff, and Pan Am.

The 1990s ushered in a new period of mergers, global alliances, and joint marketing agreements, as well as domestic alliances between major and regional carriers. In addition, there have been significant structural changes in the way airlines conduct business. The airlines have examined every aspect of their operations to reduce costs. A "shifting downstream" of service to smaller communities marked the mid-1990s. The regional carriers, with lower labor costs, came into their own. Shorter haul service to hub airports was turned over to the regional carriers, and they provided high frequency, turboprop service to and from their major carrier affiliate's hub airport. For many communities, the turboprops were never fully accepted. As

the domestic system solidified, the major carriers have re-entered this segment of the airlines business by acquisition of the regional carriers and by replacement of turboprops with regional jets. This process has left smaller cities with few options for air service.

Five major factors that have helped to shape the development of today's industry include the following:

- A robust, but cyclical economy – Trends in commercial passenger boardings, when compared to the U.S. Gross Domestic Product (GDP), indicate a direct relationship between periods of GDP growth and decline to periods of increases and decreases in the total number of U.S. commercial passenger boardings. These trends clearly indicate that the airline industry and commercial passenger traffic are significantly impacted by upturns and downturns in the U.S. economy. Since the early 1990s, the steady growth in the U.S. economy has resulted in a lengthy period of significant increases in total commercial passenger traffic.

- Over-expansion of the airline industry in the late 1980s – The over-expansion of the airline industry that was experienced in the late 1980s was a major factor that caused airlines to lose over $13 billion during the early 1990s, the largest losses ever experienced. As a result of these losses, airlines were forced to re-evaluate their systems and make the following changes:

  - Major adjustments to their route structures, concentrating on the most profitable routes;
  - Increase seating capacity and maximize frequencies to achieve higher load factors;
  - Eliminate secondary connecting hubs and introduce point-to-point service in the larger markets;
  - Focus on the development of strategic marketing alliances with regional carriers in the U.S. and other airlines abroad, and;
  - Rationalize aircraft fleets that, on average, offered lower operating costs.

- Widespread adoption of similar successful strategies by each of the major carriers – The three- to five-year long-term planning horizons under which most airlines operate allow them to observe and quickly emulate the successful strategies of their competitors. This copycat approach to providing air service has resulted in several episodic waves of strategic changes by the airlines. The following are examples of these types of actions that have been taken by most major airlines:

  - Development of fortress hubs to capture and control traffic flows;
  - Initiation of frequent flyer programs;
  - Emulation of Southwest Airlines;
  - Code-sharing alliances with regional carriers;
  - Replacement of jets with turboprop or regional jet aircraft in short haul markets;
  - Abandonment/Reduction of 19-seat aircraft; and
  - Acquisition of whole or part of code-sharing partners.

  Widespread adoption of these strategies has intensified their impact on air service within the U.S.

- Technological advances including computer reservation systems, yield management, and e-commerce – The use of computers has had a profound impact on the air carrier industry from the standpoint of operations, marketing, pricing, and ticket distribution. One of the most significant changes has been the ability of airlines to implement Yield Management Systems that allow them to constantly track prices, bookings, and fare information for many airlines. These systems allow airlines to have up-to-the-minute information about passenger demand and fares, which allows their pricing departments to constantly adjust fares, frequently over one million times per day, to adjust the number of seats and

airfares to maximize load factors and revenues. In addition, the recent growth in the use of electronic and paperless tickets and the direct purchase of tickets from the airlines, as opposed to the traditional travel agent process, has also significantly impacted the industry.

- September 11 and Other 2001 Trends - Starting in mid-2000, the U.S. economy began a downturn that has impacted current commercial aviation activity. The impact of the economic downturn was a reduction in business travel, which has a tremendous impact on commercial airline profitability. It is estimated that, in 2000, business travelers accounted for 43 percent of the passenger volume, but were responsible for 65 to 70 percent of the airlines' revenues and profits. Airline yields decline at a more rapid rate when business travel declines since business travelers account for a high percentage of airline profitability due to the higher fares typically paid for non-discretionary travel. For the first two quarters of 2000, U.S. airlines were faced with significant losses similar to those experienced in the early 1990s. With these losses, plans were in place to reduce airline service to help the airlines return to profitability.

  While the economic downturn was beginning to result in airline industry changes, a more significant impact was on the horizon. On September 11, 2001, terrorists hijacked four U.S. airliners that ultimately crashed. These terrorist attacks resulted in complete closure of the U.S. aviation system for two days. When the system re-opened, new airport and airline security measures were in place at the commercial airports, but the airline passenger traffic did not immediately rebound. The costs incurred by the airlines as a result of September 11 increased, but with fewer passengers, significant financial losses were experienced by almost all airlines. According to travel statistics, the current break-even load factor, or the percentage of seats that need to be filled for the airlines to break even with their current costs, ranges from 85 to 96 percent for airlines such as America West, Northwest, Delta, and United. Southwest Airlines has also seen a financial impact, but its current (November 2001) break-even load factor is in the 65 percent range.

  The long-term impacts of September 11 on the airline and airport industry are unknown at this time. In the short term, many of the airlines have reduced their schedules by as much as 20 percent. These reductions have impacted not only the number of actual aircraft operated, but have also impacted many airline employees through layoffs. Some airlines have actually parked aircraft to help reduce their costs. The airlines received a financial package from the federal government to help offset their losses, but for some airlines the financial package is still not sufficient to keep them solvent. The only airlines that have been noted to achieve profitability in 2000 are low-cost carriers such as Southwest, AirTran, and JetBlue. The profits of these airlines are also down, but they continue to make money and are actually considering expansion.

  Industry experts have suggested that the current economic environment and September 11 have provided an opportunity for airlines to consider all facets of their operation, including reducing flights and activities that were either not profitable or that had small, low-profit margins. No matter the reason, commercial activity has changed in recent months. Projections of activity by the various industries range from one extreme to another. The long-term impact on commercial activity is difficult to assess at this point in the LASP. Continued changes will be monitored as the plan proceeds with an effort to address the potential impacts in subsequent sections.

ANTICIPATED FUTURE COMMERCIAL TRENDS

The preceding descriptions of historic commercial airline trends are the background from which the Federal Aviation Administration (FAA) has developed forecasts of future levels of commercial passenger activity.

The most recent forecasts of commercial passenger activity presented by the FAA in *FAA Aerospace Forecasts, Fiscal Years 2000-2011* reflect anticipated strong growth over the study period in both domestic and international passenger activity at U.S. airports. The following paragraphs summarize the FAA's forecasts of future commercial airline passenger activity. It should be noted that these forecasts were developed prior to the September 11 terrorist attacks.

Based on the FAA's forecast of continued, yet slowing, economic expansion in the U.S. over the forecast period, commercial passenger enplanements in the U.S. are anticipated to experience sustained growth throughout the forecast period. The FAA projects that total domestic passenger enplanements will increase from approximately 611.2 million in 1999 to approximately 944.7 million in 2011, representing an average annual growth rate of approximately 3.6 percent.

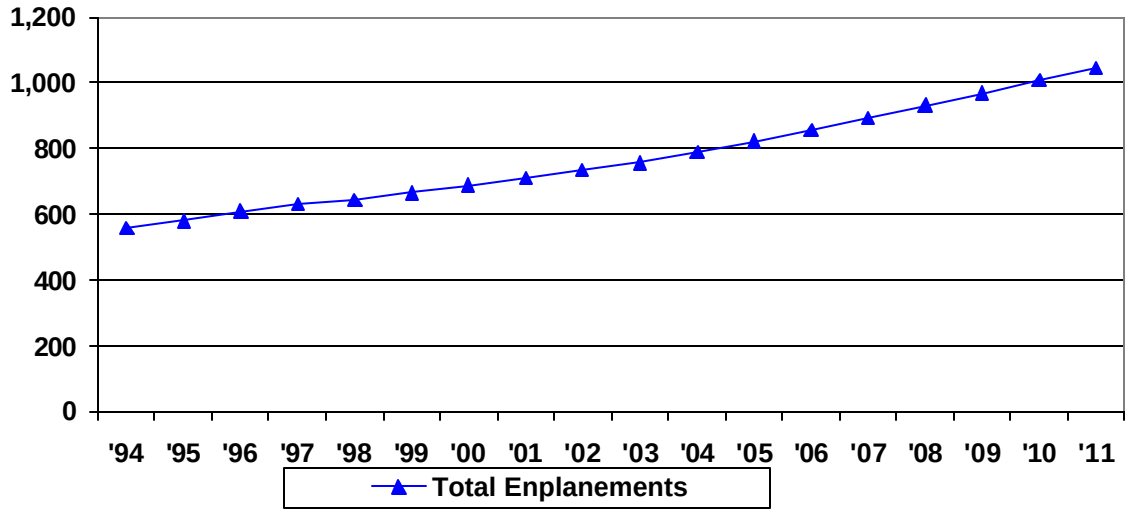
FAA forecasts of international passenger activity are based on the assumption that the world economy (based on international GDPs) will grow at a pace that exceeds the U.S. GDP growth over the forecast period. Based on this assumption, international passenger enplanements are projected to increase from approximately 53.3 million in 1999 to roughly 101.7 million in 2011. This growth represents a relatively robust forecasted average annual growth rate of approximately 5.1 percent. The strongest growth in total international passenger traffic is anticipated to be experienced in the Latin American markets and Pacific markets, forecasted to grow at average annual rates of approximately 6.1 percent and 6.0 percent, respectively. Average annual growth rates in the Atlantic and Canadian markets are projected at approximately 4.3 percent and 3.6 percent, respectively.

The following table presents a summary of historic passenger enplanement levels at U.S. airports and the FAA's most recent domestic and international passenger enplanement forecasts for each year in forecast period.

Year	Domestic Enplanements (Millions)	International Enplanements (Millions)	Total Enplanements (Millions)
Historical			
1994	511.3	46.3	557.6
1995	531.1	48.6	579.7
1996	558.1	50.0	608.1
1997	578.3	52.3	630.6
1998	589.3	53.1	642.4
1999	611.2	53.3	664.5
Average Annual Growth Rate	*3.6 %*	*2.9 %*	*3.6 %*
Forecast			
2000	632.5	55.6	688.1
2001	652.4	58.1	710.5
2002	672.3	60.9	733.2
2003	692.6	64.7	757.3
2004	719.6	68.7	788.3
2005	749.9	72.8	822.7
2006	781.3	76.9	858.2
2007	812.5	81.2	893.7
2008	844.8	86.0	930.8
2009	877.4	91.0	968.4
2010	910.4	96.2	1,006.6
2011	944.7	101.7	1,046.4
Average Annual Growth Rate	*3.6 %*	*5.5 %*	*3.9 %*

Source: FAA Aerospace Forecasts, Fiscal Years 2000 - 2011

Domestic and international passenger enplanement data presented in the previous table is depicted in the following graph.



Source: FAA Aerospace Forecasts, Fiscal Years 2000 - 2011

In summary, current FAA forecasts for commercial passenger activity in the U.S. project stable and relatively strong growth in both domestic and international enplanements at U.S. airports. Domestic passenger enplanements are projected to increase at an average annual rate of approximately 3.6 percent from 1999 to 2011, the same growth rate experienced at U.S. airports between 1994 and 1999. International passenger enplanements are projected to increase at an average annual rate of approximately 5.5 percent over the forecast period, a rate significantly greater than the 2.9 percent average annual growth rate experienced in this category of enplanements between 1994 and 1999.

The FAA also forecasts other factors related to commercial passenger activity. According to *FAA Aerospace Forecasts, Fiscal Years 2000-2011*, between 1999 and 2011 air carrier aircraft operations are projected to increase from 14.6 million to 20.4 million; average passenger trip length is expected to increase from 821.1 to 872.1 miles; average seats per aircraft departure will increase from 141.3 to 148.7; and the average load factor is expected to increase from 69.8 percent to 70.0 percent.

In terms of regional/commuter carriers, the FAA forecasts that aircraft operations will increase from 10.6 million to 14.4 million between 1999 and 2011; average passenger trip length is expected to increase from 260.2 to 324.1 miles; average seats per aircraft departure will increase from 36.0 to 44.3; and the average load factor is expected to increase from 57.6 percent to 61.6 percent.

TRENDS AFFECTING GENERAL AVIATION AIRPORTS

General aviation aircraft are defined as all aircraft that are not flown by airlines or the military; this class of aircraft operates at each Louisiana airport. Following a decline that lasted throughout most of the 1980s and into the mid-1990s, the general aviation industry and general aviation activity appear to be revitalized. Prior to 1994, declines in the number of manufacturers and shipments of single-engine aircraft continued to indicate a sagging general aviation industry. Other indicators such as active aircraft, hours flown, and active pilots (all of which are important indicators of the overall health of the general aviation industry) also declined annually during that time period. The impact of this downturn was the decline in production of new aircraft from almost 18,000 aircraft in 1978 to a low of 928 aircraft in 1994. This decline in the production of new aircraft resulted in the loss of approximately 100,000 jobs in the industry. The enactment of the General Aviation Revitalization Act of 1994, which established an 18-year Statute of Repose on all general aviation aircraft and components in terms of liability to the manufacturer, signaled a significant change in the industry. This Act spurred manufacturers such as Cessna and Piper Aircraft to reenter the single-engine piston manufacturing sector. In January 1997, Cessna produced its first new single-engine aircraft since 1986. Lancer International, Diamond Aircraft, and Mooney are also producing new piston aircraft domestically. On the downside, the Act has spurred a shift in liability from the manufacturers to airport owners and operators, as well as flight instruction and aircraft maintenance businesses.

The positive impacts that the Act has had on the general aviation industry since its passage are currently reflected in general aviation activity statistics. Since 1994, activity statistics indicate an increase in general aviation activity at FAA air traffic facilities, an increase in the active general aviation aircraft fleet size, and record shipments and billings of fixed-wing general aviation aircraft. These recent positive trends in the general aviation industry are anticipated to continue into the future due to a number of factors including the following:

- Construction of new aircraft manufacturing facilities
- Expansion of existing manufacturing facilities
- Increased expenditures on research and development of aircraft and avionics intended to make flying even safer and easier to learn

In addition, the general aviation industry is giving increased attention to "learn to fly" educational and promotional activities that should bring new pilots and aircraft mechanics into the industry.

The impacts of the events of September 11, 2001, have also been noted in terms of general aviation activity. While commercial aviation resumed within two days, it was several more days before general aviation activity was permitted. When the skies were reopened, it was on a limited basis, especially in major metropolitan areas. The issue of security at general aviation airports was unclear and methods for dealing with student training and visual flight rule flights were investigated.

Charter activity was one area that saw growth as a result of the events. According to the Air Charter Guide, a database for charter customers, 85 percent of the 98 U.S. charter operators that were interviewed in late October 2001 noted a significant increase in business since September 11. From issues such as knowing the pilots to security at the commercial airports, charter aircraft provide another avenue for business travelers, given the current airline environment. Especially while some general aviation airports have literally been closed off and on as a result of varying FAA rules, most have seen a decline in training, but other activity has been noted to have returned to near normal levels.

Specific trends related to general aviation activity, as identified in the *FAA Aerospace Forecasts, Fiscal Years 2000-2011* developed by the U.S. Department of Transportation and other national groups, are identified in following sections. These anticipated future trends are discussed in terms of the number of aircraft shipments and billings, active aircraft and pilots, changes in the active aircraft fleet mix, and business use of general aviation aircraft. As previously noted, the events of September 11 were not considered in these projected trends.

Aircraft Shipments and Billings

The General Aviation Manufacturers Association (GAMA) tracks and reports total shipments and billings of general aviation aircraft. GAMA statistics for 1999 indicate continued strong growth in the sales of general aviation aircraft, both piston and turbojet. During 1999, general aviation aircraft shipments totaled 2,504 aircraft, an increase of approximately of 12.8 percent over 1998. This represents the fifth consecutive year of increased demand for general aviation aircraft. Statistics also indicate that growth in turboprop and jet aircraft shipments are outpacing other sectors of the general aviation aircraft market. A number of factors contribute to this increase in general aviation aircraft shipments, including the production of new aircraft such as the Boeing Business Jet, the general strength of the U.S. economy, increases in the number of fractional ownership arrangements, and increases in the number of traditional corporate flight departments among U.S. businesses.

In addition, GAMA tracks total billings of general aviation aircraft, for both domestic and international customers. During 1999, aircraft billings totaled over $7.8 billion, an increase of approximately 34 percent over total billings in 1998. Included in this increase is a strong growth experienced in international billings. Currently, international general aviation shipments and billings represent over 20 percent of the U.S. manufactured aircraft.

The following table presents total general aviation aircraft shipments and billings, on an annual basis, over the time period 1990 through 1999.

Year	Total General Aviation Aircraft Shipments	Total General Aviation Aircraft Billings ($ millions)
1990	1,144	2,007.5
1991	1,021	1,968.3
1992	941	1,839.6
1993	964	2,143.8
1994	928	2,357.1
1995	1,077	2,841.9
1996	1,130	3,126.5
1997	1,569	4,674.3
1998	2,200	5,873.9
1999	2,504	7,843.6

Source: GAMA

The statistics presented by GAMA illustrate the continued strength of the general aviation aircraft manufacturing industry. In addition to the significant increases in total shipments and billings of general aviation aircraft, it is important to note that the strongest growth appears to be occurring in the jet and turbo-prop segments of the market. The growth in these segments can be attributed to increased business use of aircraft and their desire to operate safe, efficient, and high-performance aircraft. These high-performance aircraft require airport facilities to be developed to a relatively higher and more demanding standard, a factor that will be considered as system development plans are identified in this analysis.

Active Pilots

In 1999, the four major segments of the pilot population (student pilots, private pilots, commercial pilots, and airline transport pilots) each experienced growth. As a result, the total number of active pilots increased to approximately 640,110 pilots in 1999, an increase of almost 22,000 pilots compared to 1998. One of the strongest growth rates was experienced in the student pilot population, which increased by approximately 4.4 percent. These students represent the future of general aviation and are not only learning to fly for recreational reasons, but also because of career opportunities created by the needs of air carriers, fractional ownership providers, and corporate flight departments. Also worthy of noting is the 2.9 percent growth rate experienced in instrument-rated pilots in 1999. Currently, approximately 57.5 percent of the total active pilot population is instrument-rated, another reflection of the increased sophistication of aircraft and pilot.

The FAA has developed forecasts of the future pilot population, by certificate type, based on historic trends, as well as anticipated future trends. These projections estimate that the total active pilot population in the U.S. will increase from 640,110 in 1999 to 824,490 by 2011, representing an average annual growth rate of approximately 2.1 percent.

The following table presents the FAA forecasts of the active pilot population, by pilot certificate type, on an annual basis over the forecast period.

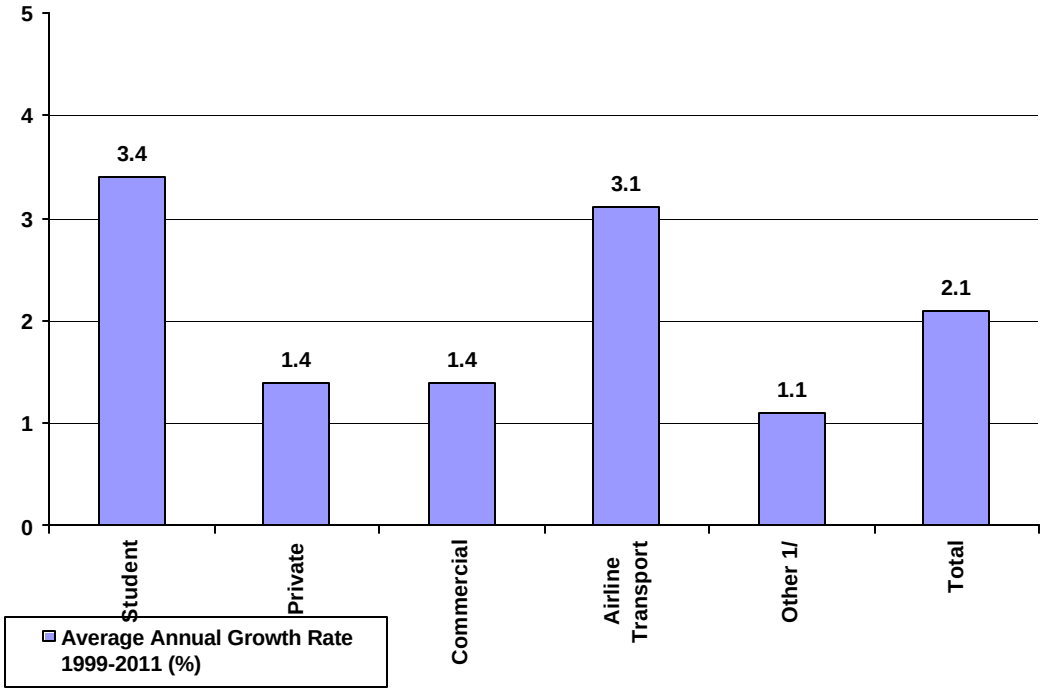
As shown in the table, the student and airline transport category of pilots is anticipated to experience the strongest growth over the 12-year forecast period, experiencing average annual growth rates of 3.4 percent and 3.1 percent, respectively. The populations of both private and commercial pilots are anticipated to increase at an average annual rate of 1.4 percent over the forecast period.

Year	Student	Private	Commercial	Airline Transport	Other 1/	Total
Historical						
1994	96,254	284,236	138,728	117,434	17,436	654,088
1995	101,279	261,399	133,980	123,877	18,649	639,184
1996	94,947	254,002	129,187	127,486	16,639	622,261
1997	96,101	247,604	125,300	130,858	16,479	616,342
1998	97,736	247,226	122,053	134,612	16,671	618,298
1999	102,000	258,749	124,261	137,642	17,461	640,113
Average Annual Growth Rate	*1.2 %*	*-1.9 %*	*-2.2 %*	*3.2 %*	*.03 %*	*-0.4 %*
Forecast						
2000	106,100	260,700	126,200	139,700	17,696	650,396
2001	110,300	267,400	128,400	144,400	17,936	668,436
2002	114,700	272,000	130,600	149,500	18,140	684,940
2003	119,300	277,500	133,300	154,400	18,345	702,845
2004	124,000	283,700	136,300	159,300	18,544	721,844
2005	128,300	288,000	138,300	164,000	18,744	737,344
2006	132,700	291,400	139,900	169,300	18,943	752,243
2007	137,000	294,600	141,500	174,400	19,137	766,637
2008	141,000	297,600	142,900	180,000	19,347	780,847
2009	145,000	300,600	144,300	186,000	19,561	795,461
2010	148,800	303,600	145,800	192,000	19,771	809,971
2011	152,500	306,600	147,300	198,100	19,990	824,490
Average Annual Growth Rate	*3.4 %*	*1.4 %*	*1.4 %*	*3.1 %*	*1.1 %*	*2.1 %*

1/ Other pilot category includes pilots with recreational, rotorcraft-only, and glider-only certificates.

Sources: FAA U.S. Civil Airmen Statistics, FAA Aerospace Forecasts, Fiscal Years 2000 - 2011

The following graph compares the average annual growth rate projected for each pilot type during the study period 1999 to 2011.



1/ Includes aircraft classified by FAA as experimental and other.

Source: FAA Aerospace Forecasts, Fiscal Years 2000 - 2011

The data presented above shows relatively strong growth, ranging from an average annual rate of 1.4 percent in the private and commercial pilot categories to an average annual rate of 3.4 percent in the student pilot category. The strong growth anticipated in the student pilot category is important to note because of the potential impacts that this growing number of pilots may have on all components of general aviation activity in the future. Student pilots, in most cases, will graduate to become active private, commercial, and/or airline transport pilots, which in turn may impact overall active aircraft fleet and general aviation activity statistics.

Aircraft Fleet

The FAA annually tracks the number of active aircraft in the U.S. Active aircraft are those aircraft that are currently registered and fly at least one hour during the year. By tracking this information, the FAA is able to identify trends in the total number of active aircraft, as well as the types of aircraft operating in the active fleet. Based on FAA estimates, the active general aviation aircraft fleet is anticipated to increase from 206,530 aircraft in 1999 to 230,995 in 2011, representing an average annual growth rate of approximately 0.9 percent. FAA forecasts for the total active aircraft fleet, as well as each major type of aircraft, are summarized in the following table:

Aircraft Type	1999	2011	Average Annual Growth Rate
Single-engine piston	145,250	158,400	**0.7 %**
Multi-engine piston	18,750	18,750	**0.0 %**
Turboprop	6,250	7,240	**1.2 %**
Jet	6,400	11,295	**4.8 %**
Rotorcraft	7,590	9,040	**1.5 %**
Other 1/	22,290	26,270	**1.4 %**
TOTAL	**206,530**	**230,995**	**0.9 %**

1/ Includes aircraft classified by FAA as experimental and other.

Source: FAA Aerospace Forecasts, Fiscal Years 2000 – 2011

As shown in the preceding table, the total active aircraft fleet is forecasted to experience an average annual growth rate of less than 1 percent. One of the most important trends identified in these forecasts is the relatively strong growth anticipated in active jet and turboprop aircraft. This trend illustrates a movement in the general aviation community towards higher-performing, more demanding aircraft. This trend will impact the types of activities occurring at general aviation airports and the types of facilities that may be required at those airports.

The following table presents FAA forecasts of active aircraft, by aircraft type, on an annual basis through the forecast period.

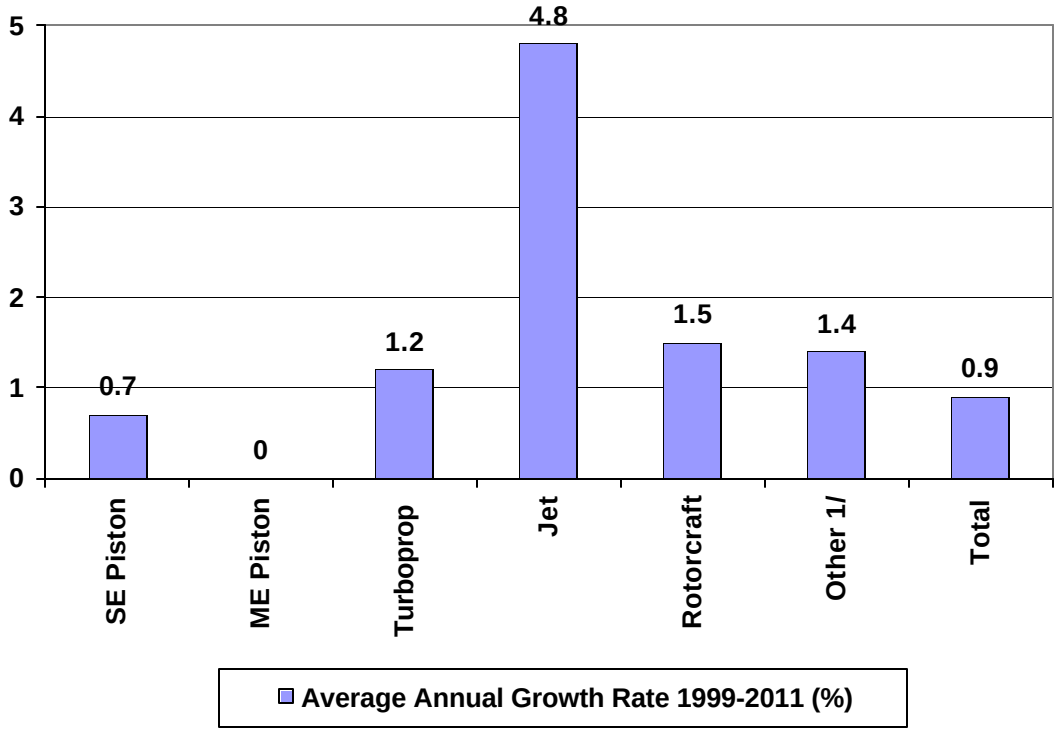
Year	SE Piston	ME Piston	Turboprop	Turbo Jet	Rotor-craft 1/	Other 2/	Total
Historical							
1994	127,351	14,801	4,092	3,914	4,728	18,050	172,936
1995	137,049	15,739	4,995	4,559	5,830	19,917	188,089
1996	137,401	16,150	5,716	4,424	6,570	20,869	191,129
1997	140,038	16,017	5,619	5,178	6,785	18,772	192,414
1998	144,234	18,729	6,174	6,066	7,426	22,082	204,710
1999	145,250	18,750	6,250	6,400	7,590	22,290	206,530
Average Annual Growth Rate	*2.7 %*	*4.8 %*	*8.8 %*	*10.3 %*	*9.9 %*	*4.3 %*	*3.6 %*
Forecast							
2000	146,400	18,750	6,340	6,820	7,745	22,600	208,655
2001	147,600	18,750	6,430	7,240	7,895	22,910	210,825
2002	148,800	18,750	6,520	7,660	8,010	23,230	212,970
2003	150,000	18,750	6,610	8,080	8,135	23,550	215,125
2004	151,200	18,750	6,700	8,500	8,240	23,880	217,270
2005	152,400	18,750	6,790	8,910	8,355	24,210	219,415
2006	153,400	18,750	6,870	9,320	8,465	24,540	221,345
2007	154,400	18,750	6,950	9,725	8,575	24,880	223,280
2008	155,400	18,750	7,030	10,125	8,690	25,220	225,215
2009	156,400	18,750	7,100	10,520	8,805	25,570	227,145
2010	157,400	18,750	7,170	10,910	8,920	25,920	229,070
2011	158,400	18,750	7,240	11,295	9,040	26,270	230,995
Average Annual Growth Rate	*0.7 %*	*0 %*	*1.2 %*	*4.8 %*	*1.5 %*	*1.4 %*	*0.9 %*

1/ Includes both piston and turbine rotorcraft.

2/ Includes aircraft classified by FAA as experimental and other.

Source: FAA Aerospace Forecasts, Fiscal Years 2000 – 2011

The following graph compares the projected average annual growth rate for each type of aircraft in the fleet mix over the period 1999 through 2011.

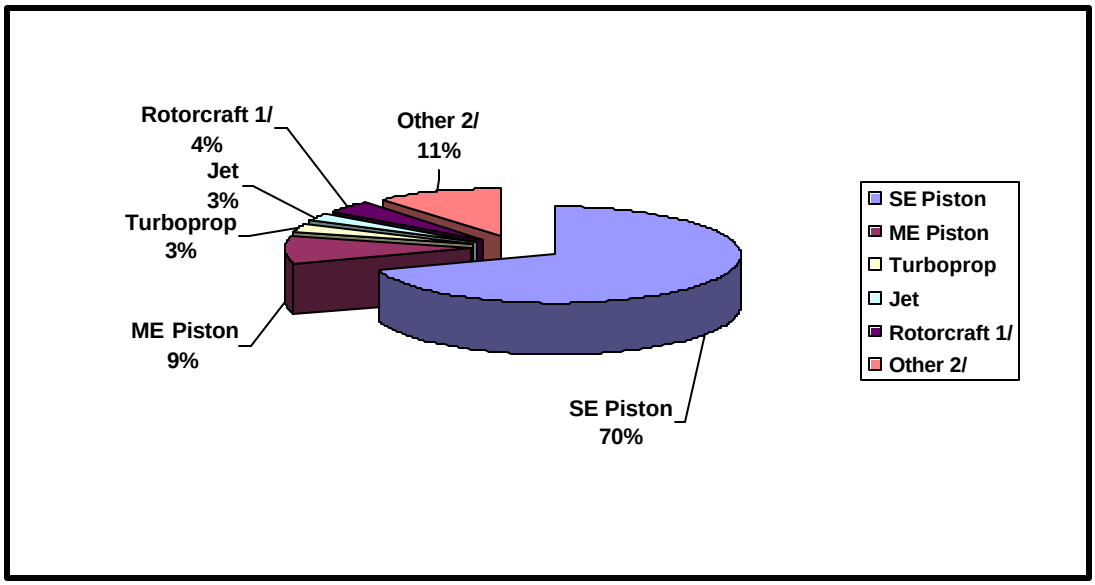


1/ Includes aircraft classified by FAA as experimental and other.
Source: FAA Aerospace Forecasts, Fiscal Years 2000 – 2011

The above graph illustrates the extent to which the growth in jet aircraft is projected to significantly outpace growth in all other components of the aircraft fleet. As shown, turboprop, rotorcraft, and other aircraft are projected to experience an average annual growth rate of over 1 percent per year over the forecast period, while the number of active multi-engine piston aircraft is anticipated to remain stable over the forecast period.

It is also useful to examine the existing and anticipated active aircraft fleet in terms of the percentage of the total fleet that each aircraft class represents. The following pie charts examine the existing mix of the 1999 active fleet, and the anticipated mix projected for the fleet of 2011.

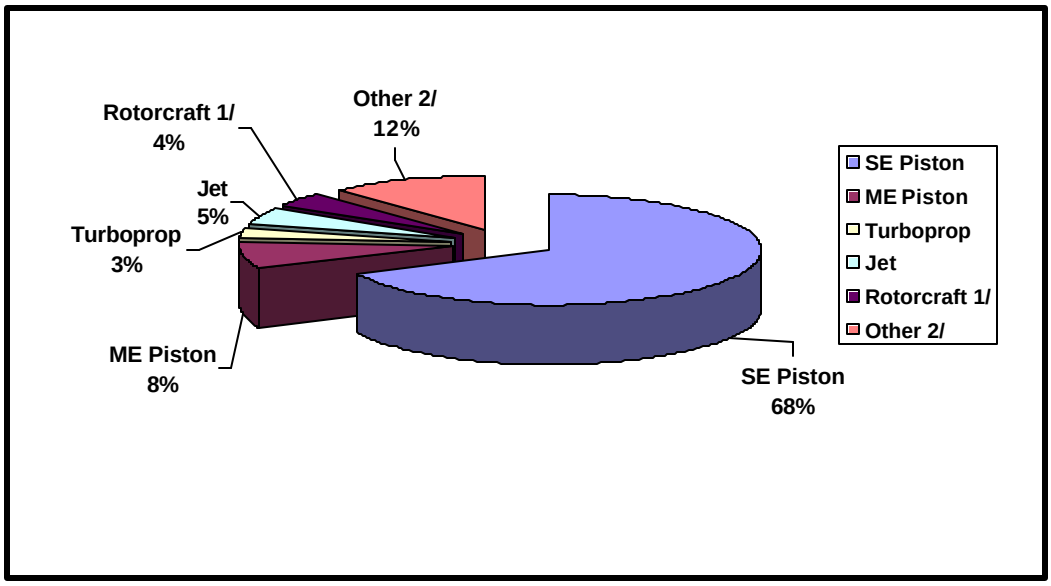
The following graph summarizes the 1999 active aircraft fleet mix.



1/ Includes both piston and turbine rotorcraft.
2/ Includes both gliders and lighter-than-air aircraft.
Source: FAA Aerospace Forecasts, Fiscal Years 2000 – 2011

As shown in the graph, the majority of the active aircraft in the current fleet are single-engine piston aircraft. As shown in the following graph, it is anticipated that the percentage of single-engine piston aircraft will decline as older aircraft are retired and replaced with more demanding general aviation aircraft.

The following graph summarizes the anticipated aircraft fleet mix for 2011.



1/ Includes both piston and turbine rotorcraft.
2/ Includes both gliders and lighter-than-air aircraft.
Source: FAA Aerospace Forecasts, Fiscal Years 2000 – 2011

Forecast data presented by the FAA indicates that each component of the general aviation aircraft fleet mix will either remain steady (multi-engine piston) or grow in terms of total number of active aircraft. Data depicted in the pie charts presented above indicates that jet and other aircraft will be the only components of the general aviation aircraft fleet mix that will see their share of the active fleet grow over the forecast period. Jet aircraft are anticipated to grow from approximately 3 percent of the active general aviation fleet mix in 1999 to approximately 5 percent of the active fleet by 2011, indicating the relative increase in sophistication that is anticipated in the active aircraft fleet and pilot population. The "other" category of aircraft is also forecast to become a larger component of the active fleet, primarily because of growth in experimental aircraft, growing from approximately 11 percent to 12 percent of the fleet by 2011.

Current and/or forecasted trends affecting general aviation can be summarized as follows:

- Recent and continued increases in the number of annual general aviation aircraft shipments
- Growth in the number of licensed pilots augmented by a relatively strong growth in the number of student pilots
- Moderate growth in the active aircraft fleet and a trend toward the operation of more demanding and more sophisticated jet aircraft, as opposed to piston or turboprop aircraft

Business Use of General Aviation Aircraft

Many businesses throughout the U.S. depend on scheduled commercial service airlines, as well as general aviation aircraft, to add to their productivity and efficiency. Louisiana's airports are essential to economic progress of the citizens and businesses of Louisiana. Without these airports, the State would be severely hampered in its ability to participate in an increasingly global community and marketplace. Air transportation makes possible the quick movement of millions of people and billions of dollars worth of goods to markets around the world. Louisiana needs to be able to compete in those markets, and there is often no practical alternative to air transportation. Similarly, the growth of a competitive domestic economy depends more and more on our ability to move by air.

A major benefit of Louisiana's airports is the State's ability to use air transportation to support its competitive advantage in a global economy. Today's economy can present commercial opportunities at any time and in any place. To remain competitive and take advantage of those opportunities, the businesses of Louisiana must be able to move people and products anywhere in the world safely, quickly, and conveniently. Air transportation is the preeminent means for commerce and communication among people, with long-range jet aircraft providing nonstop air service to major cities. In addition to the use of scheduled commercial airline services, more and more businesses throughout the nation are looking to general aviation aircraft, and the flexibility and efficiency that they provide, to support their domestic and international business operations.

Many of the nation's leading employers that use general aviation as a business tool are members of the National Business Aircraft Association (NBAA). Data from NBAA shows that many of the top U.S. businesses use general aviation aircraft. The NBAA's *Business Aviation Fact Book 2000* indicates that approximately 70 percent of all businesses included in the *Fortune 500* operate general aviation aircraft. In addition, 90 percent of the *Fortune 100* companies operate general aviation aircraft. A detailed analysis conducted for NBAA in 1998 also indicated that, among the *Fortune 500,* there were more than twice as many companies operating general aviation aircraft as nonoperators.

Business use of general aviation aircraft can range from the rental of small single-engine aircraft to multiple aircraft corporate fleets that are supported by dedicated flight crews and mechanics. The use of general

aviation aircraft allows employers to efficiently transport priority personnel and air cargo. Businesses use general aviation aircraft to link multiple office locations and to reach existing and potential customers. The use of business aircraft by smaller companies has escalated as various chartering, leasing, time-sharing, interchange agreements, partnerships, and management contracts have emerged. NBAA statistics support this claim by indicating that the number of flight departments among all the nation's businesses had increased from 6,584 in 1991 to 8,778 in 1999, an increase of approximately 33 percent. Fractional ownership arrangements have also experienced a recent trend of rapid growth. In 1998, NBAA estimated that 1,125 companies used fractional ownership arrangements; by 1999, that number had grown to 1,693 companies, a growth of over 50 percent in a single year.

Regardless of how the aircraft are owned or what type of aircraft is flown, businesses choose to use general aviation because it provides safe, efficient, flexible, and reliable transportation. Of all the benefits provided to businesses by general aviation, flexibility is the most valued by all businesses using general aviation aircraft. While there are many reasons that businesses use general aviation in their day-to-day operation, some of the most important factors, according to the businesses themselves, are as follows:

- Flexibility
- Time Savings
- Reliability
- Safety
- Security
- Improved Marketing Efficiency
- Facility/Branch Office Control
- Personnel Development Training
- Privacy and Comfort
- Efficiency

One other benefit that is becoming increasingly important to both employees and employers using general aviation aircraft for business travel is that it minimizes non-business hours away from home. Using business aircraft increases the flexibility of scheduling and provides rapid, safe, and efficient access to meeting locations. These factors allow employees using general aviation aircraft to travel to and from their destination in less time than would be required in a traditional commercial service airline schedule that includes layovers, delays, and other time-consuming events. The positive effect that minimizing non-business time away from home has on employee morale and productivity is impossible to measure, yet growing in importance.

The use of general aviation as a business tool adds to productivity and to the bottom line. According to an NBAA survey of key *Forbes* and *Fortune 500* companies, those businesses that use general aviation aircraft significantly outperform, on a routine basis, those businesses that do not use general aviation aircraft. Performance indicators such as annual sales, number of employees, value of assets, and annual income are significantly higher for employers using general aviation aircraft.

Agricultural Aviation Trends

The aerial application industry is generally defined as the application of chemicals, pesticides, and fertilizers to agricultural crops (both farmland and forests). Aerial application is also used by the oil industry for oil spill dispersant applications and by forestry agencies for forest fire fighting. According to General Aviation Manufacturers Association (GAMA), the recent trend in aerial applications has pointed to a steady decline in the number of aircraft used in spraying, and a slight increase in the total number of hours spent spraying

by these aircraft. One of the explanations for this decline often cited by aerial application pilots is the increased use of genetically altered crops, which have a higher resistance to pests.

However, the recent proliferation of these crops may not be solely to blame for the decrease in agricultural spraying. Recent years have seen a decrease in insect infestations, as well as a decline in commodity prices, which has made the cost of crop protection services less worthwhile for farmers. In addition, increased farmer debt has also lessened discretionary expenses for farmers and impacted the aerial application industry. Increased fuel and insurance costs, combined with declining business, have forced operators to charge much higher prices in order to break even, with some applicators leaving the business altogether. Some aerial application sprayers believe that, as commodity prices rise again, their fortunes will improve. Also, research has indicated that Bt cotton, a form of genetically engineered cotton, may not be as resistant to pests as previously believed, while at the same time, conventional cotton has been shown to provide higher yields overall than the Bt variety. All of this points to an uncertain future in agricultural spraying. Although recent history has seen a decline in the industry, there remains a possibility that fortunes may soon begin to change.

As evidenced in **Table 3-1**, the total number of aircraft used for agricultural spraying has declined after reaching a peak in 1996, and is forecasted to continue to decline. This could be due to the reasons for the decline in the industry listed above, including the use of genetically engineered crops, fewer infestations, and a lack of profitability. However, the decline in overall active aircraft could also be caused by the retirement of piston-engine aircraft, which currently comprise the largest percentage of agricultural sprayer fleet. As piston-engine aircraft are retired, they are being replaced by more efficient turboprops, which have higher capacities and range. As a result, the reduction in overall active aircraft can be explained partially by the decline of the industry demand, but also by a greater efficiency in active planes.

Table 3-1
U.S. Agricultural Spraying Activity

Total Number of Ag Spray Aircraft

	1995	1996	1997	1998	1999	2000	2005	2010	2020	2030
Aircraft	4,921	5,359	4,821	4,520	4,255	4,129	3,663	3,154	3,154	3,154

Total Number of Hours Flown (In Thousands)

	1995	1996	1997	1998	1999	2000	2005	2010	2020	2030
Hours Flown	1,349	1,787	1,561	1,489	1,415	1,429	1,484	1,557	1,557	1,557

Source: GAMA, Wilbur Smith Associates

The total number of hours flown nationally by agricultural sprayers has shown a similar trend as the total number of active planes, peaking in 1996 and declining since. However, the number of hours flown in 1999 was still greater than in 1995, and it appears that, as aerial application aircraft increase in efficiency, the number of hours flown by active aircraft will increase.

LOUISIANA AVIATION TRENDS

Presentation of the national trends is important to understanding how Louisiana's aviation activity might be expected to change. For this study, trends in Louisiana's total annual aircraft operations, total annual based aircraft, and total annual enplanements were reviewed.

TOTAL AIRCRAFT OPERATIONS

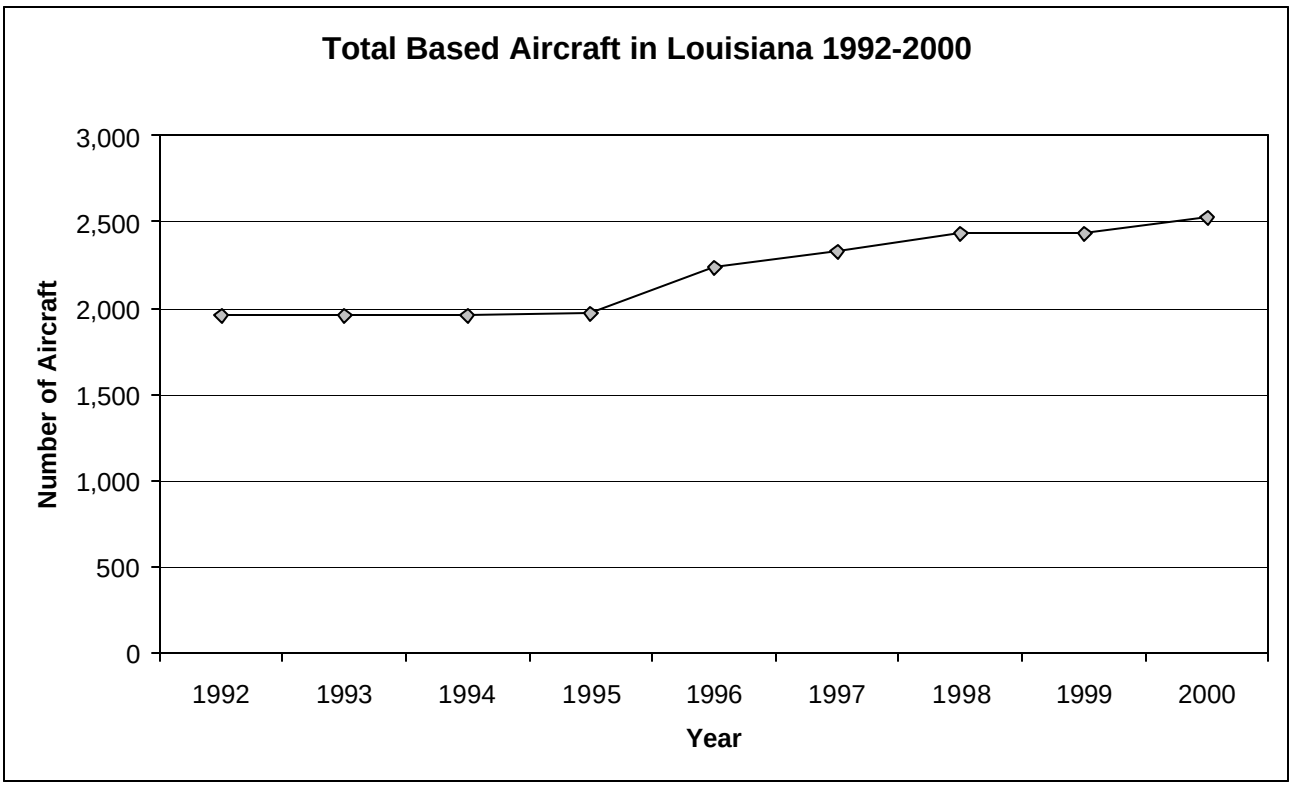
Total aircraft operations at public-use airports in Louisiana were approximately 1.3 million in 1989. Over the 10-year period, total aircraft operations in the State grew to over 1.9 million, an overall increase of 44 percent. On an average annual basis, total aircraft operations have grown at a rate of approximately 3.7 percent. Comparatively, general aviation operations recorded by the FAA at towered airports nationwide grew at an average annual rate of 2.0 percent between 1994 and 1999. The FAA projects that general aviation activity at towered airports will increase at an average annual rate of 1.7 percent over the 1999 to 2011 period.

Source: FAA TAF and WSA Team

TOTAL BASED AIRCRAFT

Total based aircraft at Louisiana public-use airports were approximately 1,954 in 1992. Since 1992, total based aircraft in the State have grown to over 2,500, an overall increase of 29 percent. On an average annual basis, total based aircraft have grown at a rate of approximately 3.3 percent. While the FAA does not track based aircraft, they do track active aircraft through a survey titled "General Aviation and Air Taxi Activity Survey." The results of the survey show that the active fleet in the United States has increased for

four consecutive years, with an overall increase of over 18 percent. The average annual rate for the most recent period that the survey has been conducted shows an average annual growth of 2.9 percent. The FAA projects that active general aviation aircraft will increase at an average annual rate of 0.9 percent over the 1999 to 2011 period. This is a smaller rate than what Louisiana's total based aircraft experienced from 1992 to 2000.



Source: FAA TAF and WSA Team

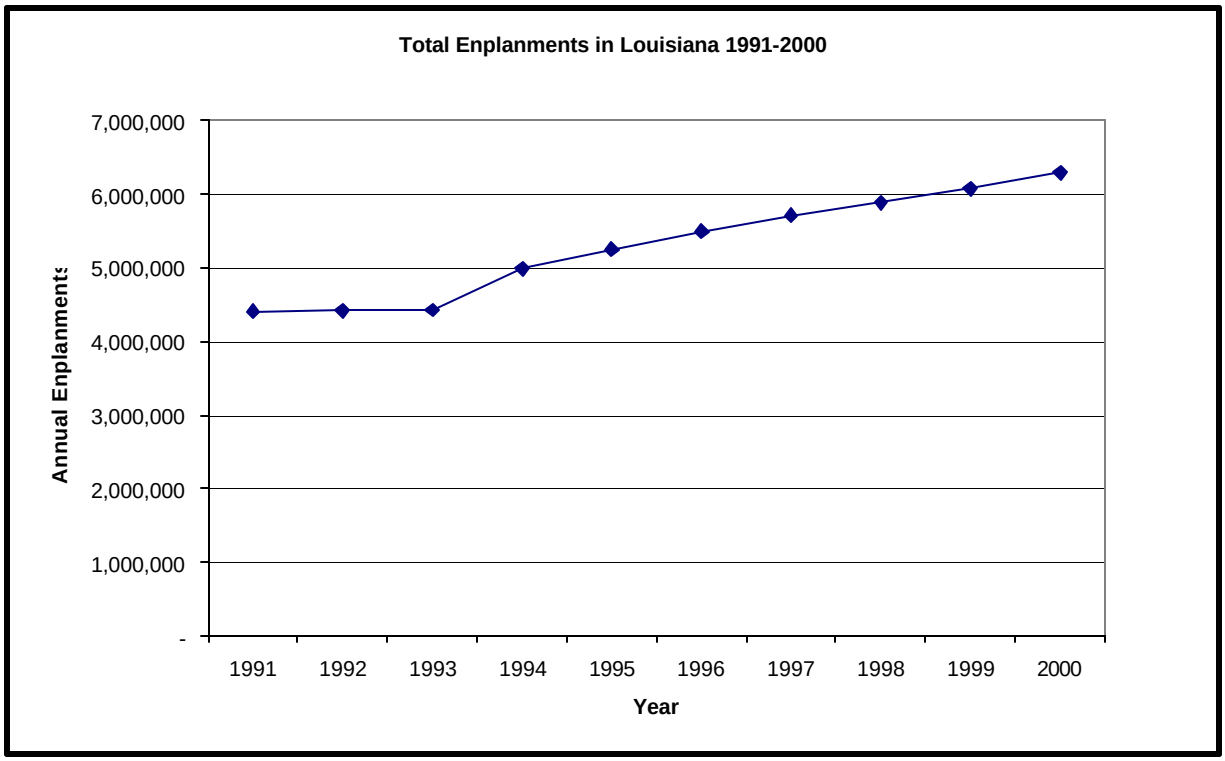
TOTAL ENPLANEMENTS

Enplanements are recorded at seven commercial service airports in Louisiana. These seven airports serve the following communities:

- Alexandria
- Baton Rouge
- Lafayette
- Lake Charles
- Monroe
- New Orleans
- Shreveport

Total enplanements at the seven commercial service airports have grown from nearly 4.4 million in 1991 to over 6.3 million in 2000. This represents a total growth of over 43 percent. On an average annual basis, Louisiana's enplanements have grown, on average, over 4.0 percent per year. Domestic enplanements reported by the FAA for domestic air carriers, including regional/commuter and major/national air carriers,

grew at an average annual rate of 3.6 percent between 1994 and 1999. The FAA forecasts that domestic enplanements will increase at an average annual rate of 3.6 percent over the 1999 to 2011 period.



Source: FAA TAF and WSA Team

CHAPTER 4 – AVIATION FORECAST

The development of aviation activity projections for the airports included in Louisiana's aviation system is an essential step in assessing the need for and phasing of future development requirements. Activity projections are used in determining the role for each airport within the State system, evaluating the ability of the system to accommodate future activity levels, and planning future airside and landside facilities for the system. For this analysis, projections were developed for a 30-year period; 2000 served as the base year for the analysis since this was the most recent period for which a complete calendar year of historic data was available.

The assumptions and methodologies used to prepare aviation demand projections for the airports included in the Louisiana Aviation System Plan are discussed in the following sections:

- General Approach to Forecasting

- Commercial Service Activity Projections
  - Annual Passenger Enplanements
  - Annual Airline Operations

- General Aviation Activity Projections
  - Based Aircraft Projections
  - General Aviation Operations Projections

- Military Operations Projections

- Air Cargo Tonnage Projections

- Summary

GENERAL APPROACH TO FORECASTING

The general approach used to develop aviation forecasts for the State of Louisiana's airport system was to identify historical relationships between Louisiana aviation factors and total U.S. aviation activity. Actual trends in demand, experienced on a statewide basis and at individual system airports, were also considered. In some cases, historical data were not available for all activity indicators at each system airport. In years for which data were not available, assumptions were made concerning activity levels. Airport-specific historical data presented and discussed in this chapter were provided by the FAA, the airports, and the Louisiana Department of Transportation and Development.

Demand projections generally fall into two distinct categories, commercial and general aviation. Significant differences in these two sectors of the aviation industry often make it necessary to modify the general approach or methodology used in forecasting to reflect specific airport or industry conditions.

Commercial service enplanement projections are prepared to provide a basis for determining various facility requirements in the terminal area, as well as the general adequacy of the commercial airport system to meet the State's needs for scheduled air travel. For this study, projections were developed using a market share approach in which airport-specific trends and conditions in aviation were compared to national trends and conditions during the same historical period. This approach allows the use of the

approved national forecasts published by the FAA, but also takes into account historical trends in activity at each system airport. In addition, the FAA's projections of enplanements included in their Terminal Area Forecast (TAF) were also extrapolated to 2030 for comparative purposes. Each community's population was also considered as part of the enplanement projection methodology.

Commercial airline operations were developed based on FAA Terminal Area Forecast (TAF) data. With this approach, expected airport usage by carriers operating at Louisiana's commercial service airports can be projected. Since trends in the commercial aviation industry indicate a continual shift in passenger traffic and airport departure preferences, the number of aircraft operations at the Louisiana airports will also rise during the projection period, albeit at various rates at the State's seven commercial airports.

General aviation activity, measured in terms of total annual aircraft operations (takeoffs and landings), is sometimes related to the number of aircraft based at a particular airport. Therefore, preparation of based aircraft projections is an important element in the Louisiana Aviation System Plan. Projections of based aircraft are essential to the preparation of facility requirements and to the projection of general aviation operations for system airports.

For this study, based aircraft were projected using a top-down methodology, which examined the State's share of aircraft in the nation's general aviation fleet. As part of its national forecast, the FAA projects total active general aviation aircraft. An "active" aircraft is defined by the FAA as any aircraft flown at least one hour during the previous year. By comparing the FAA's forecast of active aircraft to statewide-based aircraft in Louisiana, a projection of future statewide based aircraft can be made. Actual trends in based aircraft at system airports along with each airport's historic/current market share of general aviation aircraft in Louisiana were used to develop based aircraft projections.

To develop projections of general aviation aircraft operations for the Louisiana airports, three methodologies were considered. The first methodology considered each airport's market share in operations and assigned an appropriate future growth rate based on historical growth. The second methodology considered population growth of each parish as a factor in projecting future growth. Under this assumption, as a parish's population grows, aircraft operations for airports in the parish will grow correspondingly. The third methodology determined the operations per based aircraft (OPBA) ratio for each airport and assigned future OPBA ratios for each airport in each of the projection periods. The selected OPBA ratios are then applied to the based aircraft projections to produce projections of total annual general aviation operations for this methodology.

COMMERCIAL SERVICE ACTIVITY PROJECTIONS

Since air carrier and regional/commuter operational activity levels are directly linked to enplanements, a preferred enplanement projection for each of Louisiana's commercial service airports must be established prior to development of operational demand projections for commercial carriers. Commercial service activity projections were developed for both passenger enplanements and annual operations. Calendar year 2000 was used as the base year for these projections, with the most recent FAA forecasts (*FAA Aerospace Forecasts, FY 2000-2011*) used as both a reference and a projection tool. Information from the FAA's Terminal Area Forecast (TAF) was also used in this analysis.

Before discussing the projections of enplanements and commercial operations, the following terms used must be defined:

- *Major* airlines are airlines with gross operating revenues during any calendar year of more than $1 billion.

- *National* airlines gross between $100 million and $1 billion during any calendar year.

- *Regional* airlines are those airlines that gross less than $100 million during any calendar year.

- *Commuter* airlines are classified by the type of aircraft used rather than the level of operating revenue. The term "commuter" is not associated with the U.S. Department of Transportation (DOT) reporting system for carrier earnings. Commuter airlines are those who operate aircraft with a maximum of 60 seats and who also conduct at least five scheduled round trips per week between two or more points.

Projections of commercial activity were prepared for the Louisiana airports that are expected to continue providing scheduled passenger service throughout the planning period. These airports include the following:

- Alexandria — Alexandria International
- Baton Rouge — Baton Rouge Metropolitan
- Lafayette — Lafayette Regional
- Lake Charles — Lake Charles Regional
- Monroe — Monroe Regional
- New Orleans — Louis Armstrong New Orleans International
- Shreveport — Shreveport Regional

No additional assumptions were made regarding the level of air service in Louisiana while preparing these projections; only natural growth was assumed. New types of service, such as transition from strictly regional commuter service to combined major/national and regional commuter service, new service at airports currently without scheduled commercial service, were not analyzed.

ANNUAL PASSENGER ENPLANEMENTS

Passenger enplanement projections were developed using a market share approach. The market share/growth rate methodology examines each airport's historical and projected share of the U.S. market through a comparison of historical and expected growth rates for each. The U.S. forecast provides a growth base, reflecting how industry traffic in general is anticipated to grow in the future, considering factors such as the nation's economic well being, aviation industry trends, and airline fuel and fare pricing trends. Based on the U.S. forecast and historical activity at each airport, assumptions were made relative to how each airport's share of U.S. enplanements would change over the 30-year planning period. The passenger enplanements projections for Louisiana's seven airports are discussed in the following sections.

Alexandria International Airport

Enplanements on commercial service aircraft at Alexandria International Airport began in August 1996. Prior to this time, scheduled commercial service took place at Esler Regional Airport. Since airline operations were initiated at Alexandria International Airport, enplanement activity has grown markedly from 67,941 enplanements in 1991 to 133,938 in 2000. This represents an overall average annual rate of growth of nearly 8 percent. During this time the airport's market share of U.S. enplanements continued to increase from .014 percent in 1991 to .019 percent in 2000. To develop enplanements projections for Alexandria International Airport and the remaining commercial service airports in Louisiana, the airport-

specific anticipated market share was applied to the projected U.S. enplanement to derive enplanement projections for each of the milestone years.

The specific formula used to develop this projection is as follows:

Market Share * U.S. Enplanements = 2030 Projected Enplanements
Example: (.022)*(1,964,285,400) = 451,800

This formula is used for all enplanement projections contained in this chapter. Assuming that the airport's market share of U.S. enplanements continues to increase to .022 percent in 2030, enplanements are projected to increase to reach 432,100 (see **Table 4-1**). This increasing market share results in an average annual growth rate of 3.98 percent.

The FAA's TAF projects enplanement at Alexandria International Airport to increase to nearly 176,000 in 2015, an average annual rate of 1.8 percent (see **Table 4-2**). When extending the TAF growth rate out to the year 2030, the airport is projected to have over 230,000 enplanements. Table 4-1 projects the enplanements at Alexandria International Airport to reach over 432,000 enplanements. Projections of enplanements were also developed using historical metropolitan statistical area (MSA) population growth rates. In this methodology, future enplanements are projected based on the assumption that enplanements will increase at the same rate as the historical increase in population. **Table 4-3** identifies the projected enplanement growth using the MSA growth rate. Using this methodology, Alexandria International Airport's future enplanements are projected to decrease since the MSA experienced a decline in population from 1990 to 2000 due to the closure of England Air Force Base in the early 1990's.

Baton Rouge Regional Airport

Enplanements at Baton Rouge Regional Airport decreased from 448,534 in 1991 to 435,233 in 2000. In 1993, passenger enplanements reached its lowest point for the time period. At this time, 413,703 passengers boarded aircraft. By 1997, however, enplanements had rebounded and reached a high point for the time period with 474,774 enplanements. Since 1997, enplanements have declined at the airport.

The airport's share of U.S. enplanements has decreased from .092 percent in 1991 to .062 percent in 2000. To project enplanements for Baton Rouge Regional Airport, a decreasing market share of U.S. enplanements was applied. By decreasing the airport's market share of total U.S. enplanements from .062 percent to .035 percent, enplanements are expected to increase from 435,233 in 2000 to 494,600 in 2015 and 687,500 by 2030 (see **Table 4-4**). This growth rate represents an average annual growth rate of 1.54 percent.

The FAA's TAF projects enplanements at Baton Rouge Regional Airport to increase to nearly 483,200 in 2015, an average annual rate of 0.7 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have over 536,400 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 1.3 percent for the airport (see Table 4-3), which yields 530,653 enplanements in 2015 and 646,992 enplanements by 2030.

Lafayette Regional Airport

Enplanements at Lafayette Regional Airport increased from 130,163 in 1991 to 189,182 in 2000. This represents an average annual growth rate of 4.2 percent. In 1998, passenger enplanements reached its

highest point for the time period. At this point, 214,174 passengers boarded aircraft at the airport. By 2000, however, enplanements had declined to 189,182.

The airport's share of U.S. enplanements has fluctuated, but has averaged approximately .027 percent from 1991 to 2000. To project enplanements for Lafayette Regional Airport, an increasing market share of U.S. enplanements was applied. By increasing the airport's market share of total U.S. enplanements from .027 percent to .030 percent, enplanements are expected to increase from 189,182 in 2000 to 341,500 in 2015 and 589,300 by 2030 (see **Table 4-5**). This growth rate represents an average annual growth rate of 3.86 percent.

The FAA's TAF projects enplanements at Lafayette Regional Airport to increase to over 338,000 in 2015, an average annual rate of 3.9 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have over 603,906 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 1.1 percent for the airport (see Table 4-3), which yields 223,530 enplanements in 2015 and 264,115 enplanements by 2030.

Lake Charles Regional Airport

Enplanements at Lake Charles Regional Airport increased from 61,862 in 1991 to 82,923 in 2000. This represents an average annual growth rate of 3.3 percent. In 1998, passenger enplanements reached their highest point for the time period. At this point, 88,941 passengers boarded aircraft at the airport. By 2000, however, enplanements had declined to 82,923.

The airport's share of U.S. enplanements has decreased slightly from .013 percent in 1991 to .012 percent in 2000. To project enplanements for Lake Charles Regional Airport, a constant market share of U.S. enplanements was applied. By keeping the airport's market share of total U.S. enplanements at .012 percent, enplanements are expected to increase from 82,923 in 2000 to 138,300 in 2015 and 230,700 by 2030 (see **Table 4-6**). This growth rate represents an average annual growth rate of 3.47 percent.

The FAA's TAF projects enplanements at Lake Charles Regional Airport to increase to nearly 129,629 in 2015, an average annual rate of 3.0 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have over 202,642 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 0.9 percent for the airport (see Table 4-3), which yields 91,054 enplanements in 2015 and 103,883 enplanements by 2030.

Monroe Regional Airport

Enplanements at Monroe Regional Airport increased from 112,441 in 1991 to 126,854 in 2000. This represents an average annual growth rate of 1.35 percent. In 1992, passenger enplanements reached their highest point for the time period. At this point, 128,491 passengers boarded aircraft at the airport. By 2000, however, enplanements had declined to 126,854.

The airport's share of U.S. enplanements has decreased from .023 percent in 1991 to .018 percent in 2000. To project enplanements for Monroe Regional Airport, a decreasing market share of U.S. enplanements was applied. By decreasing the airport's market share of total U.S. enplanements from .018 percent to .012 percent, enplanements are expected to increase from 126,854 in 2000 to 153,100 in 2015 and 235,700 by 2030 (see **Table 4-7**). This growth rate represents an average annual growth rate of 2.09 percent.

The FAA's TAF projects enplanements at Monroe Regional Airport to increase to over 179,800 in 2015, an average annual rate of 2.4 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have nearly 255,000 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 0.4 percent for the airport (see Table 4-3), which yields 133,684 enplanements in 2015 and 140,881 enplanements by 2030.

Louis Armstrong New Orleans International Airport

Enplanements at Louis Armstrong New Orleans International Airport increased from 3,274,089 in 1991 to 4,940,011 in 2000. This represents an average annual growth rate of 4.68 percent. Enplanements have increased steadily at the airport every year during the time period.

The airport's share of U.S. enplanements has increased from .669 percent in 1991 to .700 percent in 2000. To project enplanements for Louis Armstrong New Orleans International Airport, an increasing market share of U.S. enplanements was applied. By increasing the airport's market share of total U.S. enplanements from .700 percent to .735 percent, enplanements are expected to increase from 4,940,011 in 2000 to 8,632,600 in 2015 and 14,437,500 by 2030 (see **Table 4-8**). This growth rate represents an average annual growth rate of 3.64 percent.

The FAA's TAF projects enplanements at Louis Armstrong New Orleans International Airport to increase to over 7,504,773 in 2015, an average annual rate of 2.8 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have nearly 11,401,112 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 0.4 percent for the airport (see Table 4-3), which yields 5,245,552 enplanements in 2015 and 5,569,990 enplanements by 2030.

Shreveport Regional Airport

Enplanements at Shreveport Regional Airport increased from 310,938 in 1991 to 379,577 in 2000. This represents an average annual growth rate of 2.24 percent. In 1998, passenger enplanements reached their highest point for the time period. At this point, 395,901 passengers boarded aircraft at the airport. By 2000, however, enplanements had declined to 379,577.

The airport's share of U.S. enplanements has decreased from .064 percent in 1991 to .054 percent in 2000. To project enplanements for Shreveport Regional Airport, a decreasing market share of U.S. enplanements was applied. By decreasing the airport's market share of total U.S. enplanements from .054 percent to .036 percent, enplanements are expected to increase from 379,577 in 2000 to 447,500 in 2015 and 707,100 by 2030 (see **Table 4-9**). This growth rate represents an average annual growth rate of 2.1 percent.

The FAA's TAF projects enplanements at Shreveport Regional Airport to increase to nearly 596,521 in 2015, an average annual rate of 3.1 percent (see Table 4-2). When extending the TAF growth rate out to the year 2030, the airport is projected to have over 937,457 enplanements. The MSA growth rate methodology indicates an average annual growth rate of 0.4 percent for the airport (see Table 4-3), which yields 405,696 enplanements in 2015 and 433,613 enplanements by 2030.

Total Statewide Enplanements

To assess the implications of these individual airport enplanement projections on a statewide basis, total statewide enplanements were examined. The totals depicted in **Table 4-10** represent the sum of the

individual airport market share methodology projections. This type of projection is referred to as a bottom-up methodology as it looks at activity from the airport-specific level and then totals the individual projections to develop a statewide total.

As shown in Table 4-10, the State's market share of total U.S. enplanements has decreased over the past nine years from .901 percent in 1991 to .890 percent in 2000. The average market share over the nine-year period is .893 percent. The individual airport enplanement projections result in a decrease in statewide market share. If the statewide market share declines from .890 percent in 2000 to .860 percent in 2030, statewide enplanements would increase from 6,287,718 in 2000 to 10,246,100 in 2015 and 16,892,900 in 2030. This growth in enplanements represents an overall statewide average annual growth rate of 3.35 percent. This rate is considered to be in line with national projections of enplanement activity, which project enplanements to increase at an average annual rate of 3.47 percent from 2000 to 2015. Table 4-2 indicates FAA TAF projections for the 2000 to 2015 time period with a moderate statewide average annual growth rate of 2.7 percent. The MSA growth rate methodology indicates an average annual growth rate of 0.7 percent for the commercial service airports statewide (see Table 4-3), which yields 6,756,217 enplanements in 2015 and 7,278,096 enplanements by 2030.

ANNUAL AIRLINE OPERATIONS

Commercial airline operations refer to those takeoffs and landings performed by scheduled airlines, including major, national, regional, and commuter carriers. Commercial service airports in Louisiana are served by a variety of carriers, with three out of the seven being served strictly by regional commuter airlines.

There is a direct correlation between enplanements and commercial operations, but the correlation is not the same for airports served by a mix of major/national and regional/commuter airlines. Carriers identified as major/national operate equipment with seating capacities between 110 and 300 seats. Regional/commuter operators in Louisiana operate aircraft with seating capacities between 30 and 70 seats. With these varying seating capacities, operational needs are determined by enplanements and average load factors.

Statewide airline aircraft operations have increased historically from 268,339 operations in 1990 to 309,742 operations in 2000. This statewide activity represents an average annual growth rate of 1.45 percent during the time period. Projections of airline operations at Louisiana's commercial service airports were developed using FAA TAF data. FAA TAF data indicate national air carrier activity from 2000 to 2015 is anticipated to grow at an average annual rate of 2.4 percent. Air carrier operations are takeoffs and landings by major and national airlines. Commuter operations are anticipated to grow at an annual average rate of 1.6 percent. Commuter aircraft operations are regarded as regional air carriers operating aircraft with 60 seats or less; also included in this category are air taxi operations. **Table 4-11** identifies the seven commercial service airports in Louisiana and their forecasted annual commercial service operations based on FAA TAF average annual growth rates. To project commercial airline operations for the seven airports, each airport's existing carrier mix was examined. At Louis Armstrong New Orleans International, major/national carriers provide the majority of the service. Therefore, the TAF growth rate for these carriers (2.4 percent) was applied to the 2000 commercial operations figure. A mix of major/national and regional/commuter provides service at Baton Rouge Regional and Shreveport Regional airports. An average of the major/national and regional/commuter growth rates (2.0 percent) uwas used to project commercial operations. For the remaining four airports, the TAF growth rate for regional commuters (2.4 percent) was used. By applying these growth rates to the seven airports,

commercial operations are projected to increase statewide from 309,742 in 2000 to 421,029 in 2015 and 573,750 annual commercial operations in 2030.

GENERAL AVIATION ACTIVITY PROJECTIONS

General aviation activity represents all facets of civil aviation, except activity by certificated route air carriers and commuters. Projections of based aircraft and general aviation operations were prepared for the system airports in the State of Louisiana. These terms are defined as follows:

- Based aircraft - The total number of active general aviation aircraft that are either hangared or tied down at an airport.

- Operations - An operation is defined as a landing or a takeoff; both a landing and a takeoff, such as a touch-and-go, accounts for two operations.

It is important to note that general aviation activity occurs at all of the airports in Louisiana's system. Therefore, projections of these two activity indicators were prepared for all 71 Louisiana system airports.

General Aviation Based Aircraft Projections

Projections of general aviation based aircraft are used in developing general aviation operations projections in later analyses. **Table 4-12** presents the historical based aircraft data for each airport for the years 1992 and 2000. Data for interim years were not available for all airports. As shown in this table, total general aviation aircraft based at system airports grew at an average annual rate of 3.3 percent between 1992 and 2000 from 1,953 to 2,526 based aircraft.

Two projection methodologies were used to project based aircraft for each system airport. The first methodology was a bottom up approach. This approach used the historical trend experienced at each airport to forecast future based aircraft. The second methodology used to project based aircraft was a top down methodology. This methodology projected statewide based aircraft using a market share approach. The State's market share of total U.S. active general aviation aircraft was examined to determine historical growth trends and to develop a projection of statewide based aircraft. Then, each airport's share of statewide-based aircraft was used to project based aircraft on an individual airport basis. Each of these methodologies, their resultant projections, and the preferred based aircraft projections are discussed in the following sections.

Bottom Up Methodology

The bottom up growth rate methodology was the first approach used to project based aircraft for each of the system airports (see Table 4-12). Using this methodology, the average annual growth rate between 1992 and 2000 at each system airport was first calculated. Because of wide swings in historical growth and decline, airports were categorized into ranges of average annual growth to project future based aircraft. Growth rates were developed for various historical ranges in growth based on the FAA's projection of demand for the general aviation industry. The FAA projected in its *FAA Aerospace Forecasts, Fiscal Years 2000-2011* that the active general aviation aircraft fleet would increase at an average annual rate of 0.9 percent through 2011.

To project based aircraft for each of the airports in the Louisiana system variations of the FAA's projected average annual growth rate were used. Airports that experienced no growth and those that lost aircraft were given a zero percent (0.0) average annual growth rate. For airports that had between 0.1 percent and 1.0 percent growth during the 1992 to 2000 time frame, half of the FAA's rate, 0.45 percent, was applied. For those airports that experienced between 1.1 percent and 2.0 percent actual average annual growth historically, the FAA's average annual rate of 0.9 percent was used. For those airports that experienced between 2.1 percent and 5.0 percent actual growth during this time frame, a growth rate of 1.45 percent, or one and a half times the FAA's rate, was used. Airports that had growth greater than 5.1 percent were assigned a growth rate of 2.0 percent, more than double the FAA's projected average annual growth rate. New airports (Alexandria International and Ruston Regional) were assigned the national average growth rate of 0.9 percent.

As shown, using the bottom up methodology, statewide based aircraft are projected to increase from 2,526 in 2000 to 2,993 in 2015 and 3,583 in 2030, a statewide average annual growth rate of 1.17 percent over the 30-year period. This rate is higher than the FAA's projected average annual rate of 0.9 percent, but lower than the State's historical average annual growth rate of 3.3 percent during the 1992 to 2000 time period.

Top Down Methodology

Table 4-13 presents projected statewide based general aviation aircraft for Louisiana using the top down methodology. As shown, the number of based aircraft in the State increased between 1992 and 2000 nearly 575 aircraft. The average annual growth rate for statewide based aircraft during this period was 3.3 percent. As shown in Table 4-13, Louisiana's share of total U.S. active general aviation aircraft has shown an increasing trend. By assuming that Louisiana's 2000 market share of total U.S. general aviation aircraft remains constant over the forecast period, statewide based aircraft are projected to increase from 2,526 in 2000 to 2,906 in 2015 and 3,342 in 2030, an average annual growth rate of 0.94 percent. By applying each airport's share of statewide based aircraft in 2000 to the projection of statewide based aircraft (Table 4-13) over the planning period, individual airport projections were produced (see **Table 4-14**).

Preferred Based Aircraft Projection

The results from the two based aircraft projection methodologies developed in the LASP were compared for each airport. In 2000, the Louisiana airports examined as part of this analysis accommodated 2,526 based aircraft. The bottom up methodology produced a 2030 projection of 3,583 based aircraft, an average annual growth rate of 1.17 percent. The top down methodology produced a 2030 projection of 3,342 based aircraft, an average annual growth rate of 0.94 percent. After comparing the results and the average annual growth rates of the two methodologies, the bottom up growth rate methodology (Table 4-12) was chosen as the preferred methodology because it more closely mirrors the growth in based aircraft that has been experienced in the recent past at Louisiana's airports.

General Aviation Operations Projections

The projection of operational demand at an airport is critical to determining the need for airside improvements. Total annual operational demand can consist of several types of activity including air carrier, military, and general aviation. For those airports with scheduled commercial air service, air carrier (including major/national and regional/commuter operations) activity was projected separately in a previous section. For those airports with significant annual military operations, the military operations

were subtracted from the total operational estimate, as were commercial operations, to arrive at a total annual general aviation activity level for each system airport.

Only those airports that have air traffic control towers have accurate data. Airports without a tower have provided estimates of operational activity. Therefore, annual operational estimates were developed through airport, FAA, and LDOTD data.

Similar to the based aircraft projections, two methodologies were tested to project general aviation operations. One methodology examined historical population growth and total annual general aviation operations at each airport and assigned future growth rates to each airport's existing general aviation operational level based on the population growth rate of the parish the airport is located in. The second methodology determined the operations per based aircraft (OPBA) ratio for each airport and projected operations based on this ratio and the preferred based aircraft projections. These two methodologies are discussed in the following sections.

Population Growth Rate Methodology

The population growth rate methodology examined the correlation between historical population in a parish and projected growth in general aviation operations experienced at each of the Louisiana system airports. In this projection methodology, future general aviation operations are projected based on the assumption that general aviation operations will increase at the same rate as the historical increase in population. **Table 4-15** identifies the projected enplanement growth rates using the MSA growth rate approach. For example, using this growth rate Alexandria International Airport's future general aviation operations are projected to decrease since the parish experienced a decline in population from 1990 to 2000.

This methodology results in statewide general aviation operations growing from approximately 1,494,384 in 2000 to 1,678,851 in 2015 and 1,929,661 in 2030. This overall growth represents an average annual rate of 0.9 percent.

Operations per Based Aircraft (OPBA) Methodology

The OPBA methodology uses the projected number of based aircraft and multiplies the number by an appropriate OPBA ratio to yield projected total annual general aviation aircraft operations for each airport. The OPBA ratio represents all general aviation operations at each airport, not just those conducted by the based aircraft. Each airport's 2000 OPBA ratio was determined to develop projections of annual operations. The preferred based aircraft projections previously presented (Table 4-12) were also used as part of this projection technique.

Table 4-16 presents the results of this methodology. As shown, statewide general aviation operations in 2000 totaled 1,494,384. The OPBA methodology produces a projection of 1,756,173 general aviation operations by 2015 and 2,085,872 in 2030. Using the OPBA methodology, statewide annual general aviation operations are projected to grow at an average annual rate of 1.1 percent over the 30-year planning period.

Preferred General Aviation Operations Projection

The results from the two methodologies were compared. Based on the review of the two methodologies, the OPBA methodology was selected as the preferred projections for all system airports. Table 4-16

presents selected general aviation operations projections. Annual general aviation operations are projected to grow in the State at an annual rate of 1.1 percent during the 30-year planning period. General aviation operations are projected to increase from a 2000 level of 1,494,384 to 1,756,173 in 2015 and 2,085,872 in 2030. The OPBA growth rate was selected since it corresponds closely with the preferred based aircraft forecasted annual growth rate of 1.17 percent.

MILITARY OPERATIONS PROJECTIONS

Military operations were identified for those system airports that accommodate such operations. The number of annual military operations at Louisiana airports was not projected to increase during the forecast period. Military activity varies with the political climate and variation in government funding of the military. Military activity was assumed to remain constant throughout the planning period. Projections of military activity are presented in **Table 4-17**, which summarizes the activity projections for system airports, which recorded military activity in the past.

AIR CARGO TONNAGE PROJECTIONS

According to the Boeing 1999 World Air Cargo Forecast, world airborne cargo is anticipated to grow at 6.4 percent per year during the next 20 years. World airfreight will grow more rapidly than mail, averaging annual growth of 6.5 percent through 2019 as measured in Revenue Tonne-Kilometers (RTK). Boeing also reports mail RTKs will display steady growth of 3.2 percent annually during the same period. World traffic (excluding CIS and Baltic Nations) will more than triple over the next 20 years, increasing from 137.1 billion RTKs in 1999 to over 470 billion RTKs in 2019.

The international market is expected to outpace domestic growth, exceeding 86 percent of total RTKs by year-end 2019. The U.S. share of the world market, currently estimated at 31.5 percent of the market, will decline through 2019. The greatest airfreight market growth is expected in those markets linked to Asia.

The Boeing forecast also indicates growth, in markets, linked to Asia is expected to outpace growth in other markets during the 1999 through 2019 period. Intra-Asia will lead the way with growth of 8.6 percent per year. Growth in both the North Atlantic and North America-Latin America markets will exceed the world average of 6.4 percent. The more mature markets of Intra-Europe and Intra-North America will grow somewhat below the world average rate at approximately 4.4 percent.

Market shares continue to change as result of dissimilar regional growth. Overall, the share of world air trade linked to Asian markets will increase from about 41 percent in 1999 to 52 percent in 2019.

Air Cargo tonnage was identified for those system airports that accommodate air cargo on a regular basis. Air cargo is measured in metrics tons. One metric ton is the equivalent of 2,204 U.S. pounds. The volume of air cargo tonnage at Louisiana airports is projected to increase at an annual average rate of 4.3 percent. This considered a moderate annual growth rate when considering in the early 1990s air cargo industry was experiencing double digit growth rates. This growth rate is based on Boeing's 1999 World Air Cargo Forecast and is applied to the forecast period.. This growth rate is slightly lower than the U.S. gross domestic product (GDP) 1995-2000 annual growth rate of 4.4 percent. Projections of air cargo tonnage are presented in **Table 4-18.**

SUMMARY

Table 4-19 presents a summary of each airport's preferred total annual operations projection, including commercial, general aviation, and military activity. On a statewide basis, total annual commercial enplanements at study airports are projected to increase from 6,287,718 to 9,407,589 by 2015 and 14,166,808 by 2030. Total annual commercial airline operations are projected to increase from their 2000 level of 327,187 to 378,297 by 2015. The majority of the State's increase in commercial activity is projected to occur at Louis Armstrong New Orleans International Airport. Airline operations are projected to increase from 309,742 in 2000 to 421,029 in 2015 and 573,750 in 2030. Based general aviation aircraft for all system airports are projected to grow from a 2000 level of 2,526 to 2,993 in 2015 and 3,583 in 2030. Total annual general aviation operations for all system airports are projected to grow from their 2000 level of 1,494,384 to 1,756,173 in 2015 and 2,085,872 in 2030.

The projections developed in this chapter will be used in the evaluation of the existing airport system's ability to accommodate future demand. The projections provided in this chapter are considered planning estimates and are based on information gathered from all available sources. These projections were generated to a system planning, rather than a master planning, level of detail. Comprehensive airport development plans will continue to provide guidance for actual airport development; individual airport plans are developed from an examination of each airport's local conditions and operating environment.

CHAPTER 5 - DEMAND ANALYSIS

This chapter establishes the factors that will aid in the identification of where and to what extent a community requires an airport and aviation-related services. Data was utilized in this evaluation from both the parish and local levels. The data allowed for the development of demand factors, which influence the location of airports and aviation-related facilities or the need for aviation services. Measurement criteria were established for each factor that allowed for the scoring of each airport and the associated city. The airports were then ranked based on the demand factors. This ranking leads to the determination or airport functional levels or roles and facility needs based on the role each airport plays in the overall statewide system.

It is important to note that the demand analysis is based on a "snapshot in time" of present conditions and is used only as a starting point in this system planning process. Based on analysis that will be conducted in subsequent steps, the future needs of the airport system will be identified.

Demand for aviation services is influenced by factors that are related to aviation, as well as factors that are unrelated. It was determined that both aviation and non-aviation factors should be considered to achieve a balance in evaluating airport needs throughout the State. These factors were then related to the following three general system performance criteria/goal categories that were established:

- Access
- Economic
- Physical

In addition, for purposes of the demand analysis, activity was also used as a category to evaluate airport roles. Data were evaluated for their availability and reliability to provide sufficient detail to support comparison of the various demand factors.

DEMAND FACTOR EVALUATION

At the onset of the LASP development, all airports were placed on a level plain regardless of the size of the airport, annual operations, annual enplanements, or type of existing aviation services at each airport. The demand factors were applied to each airport and the associated city or parish in order to measure the demand at each airport for aviation and aviation-related services.

The initial step was to identify the criteria for each of the system performance categories that would be utilized to evaluate the demand for aviation-related services. The factors are listed below, and represent data from the parish and local levels[1]. These factors are only intended to rank the demand for aviation in the associated city for existing airports. The total demand score that is discussed below does not rank the importance of the existing airport, and is not intended to declare that an airport with a higher demand rank is more important than an airport with a lower demand score. This process provides a means to group the airports by functional level based on the demand for aviation in the airport region. This grouping is necessary to establish facility and service standards or objectives that are desirable at airports in each of the functional levels.

[1] Local levels include cities, towns and villages in the environs of airports

Demand Factors

The following summarizes the factors used by system performance category and the level of data available for that factor.

ACCESS
- Current Population of the Associated City for the existing Airport - Local level
- Distance to a Metropolitan Statistical Area (MSA) [2] - Local level
- Registered Pilots - Parish Level

ECONOMIC
- Net Taxable Retail Sales Collections - Parish Level
- Aerial Application Service - Local level
- Aviation Services Available - Local level

PHYSICAL
- Primary Runway Length - Local level
- Primary Runway Approach - Local level
- Aircraft Storage Demand - Local level

ACTIVITY
- Based Aircraft - Local level
- Total Aircraft Operations - Local level
- Military Aircraft Operations
- Aviation Activity - Local level
- Based Jet Aircraft - Local level

Access

Current Population – The current population of the associated city for the existing airport represents the number of potential aviation users for the airport. The higher the population of the associated city for the airport, the higher the rank for the airport, based upon the matrix to the right.

Population Range	Score	Number of Airports
1 to 10,000	1	43
10,001 to 50,000	3	19
50,000 >	5	9

Source: U.S. Census Bureau 2000

[2] MSAs have a population of 50,000 or greater.

Distance to a Metro Area – The driving distance from the associated city of the existing airport to a Metropolitan Statistical Area (MSA) with a population of 100,000 residents was measured in miles. The associated cities that are farthest from the metropolitan areas received the highest demand rank. The towns that are in the most rural areas of the State possess a higher demand for aviation access based on their isolation from the metropolitan areas. The scores were based upon the matrix to the right.

Distance In Miles	Score	Number of Airports
0 to 15	0	15
16 to 30	1	10
31 to 45	2	20
46 to 60	3	17
60 to 75	4	3
76>	5	6

Source: GIS Analysis, Wilbur Smith Associates, Inc.

Registered Pilots – The total number of registered pilots in each parish was examined. A greater number of registered pilots in a parish represent a greater demand for aviation in that parish, which translates to a higher demand rank for the airport. If a parish possessed multiple airports, the airport with the greatest number of based aircraft was assigned a proportionally higher score. Additional airports in the same parish received a score based upon the proportion of based airplanes compared to the based airplanes at the largest airport.

Registered Pilots	Score	Number of Airports
1 to 9	1	13
10 to 19	2	17
20 to 39	3	13
40 to 99	4	17
100 >	5	11

Source: FAA Civil Aviation Registry

Economic

Net Taxable Retail Sales Collections – The greater the total net taxable retail sales in each parish, the higher the economic activity in the area. The associated parishes that collect greater tax revenue were awarded a higher demand rank, based upon the matrix to the right. If a parish possessed multiple airports, the airport with the greatest number of based aircraft was assigned the highest score. The additional airports received a score based upon the proportion of based airplanes compared to the based airplanes at the largest airport.

Retail Sales Tax Collected	Score	Number of Airports
<$1,000,000	1	14
$1.0 to $3.0 million	2	20
$3.0 to $10.0 million	3	18
$10.0 to $100 million	4	16
$100 million>	5	3

Source: The Louisiana Department of Revenue, 1999 data

Aerial Application – The airports in Louisiana that currently have aerial application service activity were identified, and a rank was applied to those airports based on the level of activity estimates provided by airport management. The airports that were estimated to have high activity received the highest rank of "5." The airports that were estimated to have medium activity received a middle rank of "3." Airports that do not currently have aerial application activity were awarded a score of "0" for this factor.

Aerial Activity Level	Score	Number of Airports
None	0	21
Low	1	27
Medium	3	9
High	5	14

Source: GCR and Wilbur Smith Associates, Inc.

Aviation Services – Nearly all airports in the State provide some level of aviation services at the airport. These services create jobs in the aviation industry and supply businesses and individuals reliant on aviation. These services range from fuel sales and aircraft maintenance to aircraft charter operations and flight instruction. The airports with 15 or more aviation services received the rank of "5", while airports with one or two aviation services received a rank of "1". The maximum possible number of services is 25. There are 14 airports in the State that do not offer any aviation services.

Aviation Services	Score	Number of Airports
0	0	14
1 to 2	1	8
3 to 4	2	14
5 to 9	3	15
10 to 14	4	11
15>	5	9

Source: GCR and Wilbur Smith Associates, Inc.

Physical

Primary Runway Length – Aircraft operations by different aircraft types are limited based on the primary runway's length. As a general rule, the longer the runway the heavier the aircraft that will be able to utilize it. Six public-use airports in Louisiana had primary runway lengths greater than 7,500 feet. The scores were based upon the matrix to the right.

Runway Length Range	Score	Number of Airports
<2,999	1	6
3,000 to 3,999	2	26
4,000 to 4,500	3	10
4,501 to 7,499	4	22
7,500>	5	7

Source: GCR, FAA 5010 Form, and Wilbur Smith Associates, Inc.

Primary Runway Approach – Weather can limit the operations of an airport if it does not have navigational equipment to guide aircraft to the runway ends. The FAA recognizes three types of runway approaches: precision, nonprecision, and visual. Precision approaches are the most stringent and demanding and therefore receive a rank of "5". Precision approaches allow aircraft to land and take off when visibility is low. Visual approaches are the least stringent and are subject to visual flight rules (VFR). Airport runways with visual approaches cannot be utilized during periods of low visibility and poor weather. The scores were based upon the matrix to the right.

Approach Type	Score	Number of Airports
VISUAL	0	26
NONPRECISION	3	31
PRECISION	5	14

Source: FAA US Terminal Procedures South Central Vol. 4 of 4 Jan. 2001, and Wilbur Smith Associates, Inc.

Aircraft Storage Waiting List – Airport management survey data indicated several public-use airports in the State have waiting lists for aircraft storage. The number of aircraft on storage waiting lists is an indicator of increased demand for use of the facility. The longer the waiting list the higher the rank assignment. Survey data indicates that 48 of the 71 airports in the LASP do not have waiting lists. The scores were based upon the matrix to the right

Source: GCR and Wilbur Smith Associates, Inc.

Aircraft Storage Waiting List	Score	Number of Airports
0	0	48
1 to 5	1	8
6 to 10	2	7
11 to 14	3	4
15 to 25	4	2
26 >	5	2

Activity

Based Aircraft – The total number of aircraft hangared or based at each airport was examined. The higher based aircraft figures represent a greater potential use of the airport, and a higher demand rank of the airport, based upon the matrix to the right.

Source: GCR, FAA 5010 Form, and Wilbur Smith Associates, Inc.

Based Aircraft	Score	Number of Airports
0	0	3
1 to 4	1	10
5 to 10	2	15
11 to 29	3	20
30 to 99	4	17
100>	5	6

Total Aircraft Operations[3] **–** Total annual aircraft operations are a measurement of how many takeoffs and landings take place at an airport annually. Airports in Louisiana experience a wide range of annual aircraft operations. Haynesville experiences approximately 200 annual operations while the busiest airport, Louis Armstrong New Orleans International Airport, experiences more than 170,000 annual operations. The higher the number of annual aircraft operations, the higher the rank of the airport.

Source: GCR, FAA 5010 Form, and Wilbur Smith Associates, Inc.

Total Aircraft Operations	Score	Number of Airports
0 to 11,500	1	41
11,501 to 99,999	3	25
100,000>	5	5

Military Aircraft Operations – Total annual military aircraft operations are a measurement of how many takeoffs and landings take place at an airport annually by various military aircraft. Most airports in Louisiana do not experience a significant number of military operations. Chennault International Airport in Lake Charles experiences over 18,000 annual military operations while Acadiana Regional Airport in New Iberia experiences approximately 12,600 annual operations. The higher the number of annual military aircraft operations, the higher the rank of the airport.

Military Aircraft Operations	Score	Number of Airports
0 to 99	0	50
100 to 999	1	4
1,000 to 1,999	2	5
2,000 to 7,999	3	6
8,000 to 12,000	4	3
12,000>	5	3

[3] It is important to note that only those airports with an air traffic control tower actually count operations. All other airports estimate the number of operations.

Aviation Activity – Airport management surveys measured 24 aviation activities that can occur on an airport. These activities include corporate aviation, recreational flying, flight instruction, law enforcement and community events, to name a few. Not all activities were given equal value. Corporate aviation, recreational flying and air cargo were given a higher value while banner towing and air shows were given a lesser value. Airport managers indicated the activity level at their airport as high (3), medium (2), or low (1). Using these value factors, an aviation activity score for each airport was produced based on the matrix to the right. For example, if an airport received and activity value of 66 points it received a score of 3. The highest possible outcome is 300. This would indicate that an airport with this outcome had high activity in all 24 aviation activities. None of Louisiana's public use airports met this level of activity.

Aviation Activity Values	Score	Number of Airports
0	0	15
1 to 49	1	16
50 to 149	3	28
150 >	5	12

Source: GCR and Wilbur Smith Associates, Inc.

Based Jet Aircraft – The total number of jet aircraft based at each airport were identified. It is assumed that jet activity indicates use of the airport by businesses in the airport's market area. The higher number of based jet aircraft the greater the potential use of the airport, and a higher demand rank of the airport, based upon the matrix to the right.

Based Jets	Score	Number of Airports
0	0	53
1	1	7
2 to 10	3	6
11>	5	5

Source: GCR, FAA 5010 Form, and Wilbur Smith Associates, Inc.

Results of Demand Evaluation

With each airport and factor scored, a final score was developed for each airport. The sum of the category scores for each airport produced the results of the demand evaluation. Again, this process is warranted to group the airports into functional levels based on the demand for aviation services in their area. The results of this process are presented in **Table 5-1**.

AIRPORT FUNCTIONAL LEVELS

With the airports scored based on their demand for aviation, the number of functional levels for the Louisiana aviation system was considered next. Functional levels are needed to determine the facility and service standards that should be used to evaluate the adequacy of Louisiana's airport system and how the system is functioning to meet the objectives set forth in Chapter One. The 1992 Louisiana SASP established six categories of airports, loosely based on definitions used by the Federal Aviation Administration (FAA) at the time the plan was conducted. These six categories were the following:

- Basic utility, general aviation
- General utility, general aviation

- Transport, general aviation
- Transport, reliever
- Transport, non-primary commercial service
- Transport, primary commercial service

These classifications are no longer used as a standard, other than the delineation between commercial airports and general aviation airports. The reliever category has also been maintained as an FAA category for general aviation airports although the standards for classification as a reliever have changed, including the minimum based aircraft, which has been raised from 50 to 100 based aircraft. To further classify airports, especially as they relate to design, the FAA groups airports based on the type of aircraft that regularly operate at the airport. The FAA classification system relies on identification of Airport Reference Codes (ARCs). This system will be discussed in more detail in a subsequent section.

To develop a functional level classification system for Louisiana based on the results of the demand analysis, the airport scores were reviewed to find mathematical breaks in the final scores. These mathematical breaks were presumed to represent division lines between the functional categories of the general aviation airports.

Through discussions with the advisory Council established for the LASP and staff members of LA DOTD, it was determined that the FAA's categories for commercial service and general aviation-relievers would be maintained. The remaining general aviation airports were classified into four functional roles based on their score from the demand analysis. It is important to note that these initial classifications are subject to refinement in subsequent analysis of the State's aviation system needs and performance. The six study classifications are as follows:

- Commercial Service
- General Aviation - Reliever
- General Aviation - National
- General Aviation - Regional
- General Aviation - Local
- General Aviation - Limited

RANGE	SCORE
NA	COMMERCIAL SERVICE
NA	GENERAL AVIATION-RELIEVER
40 to 70	GENERAL AVIATION-NATIONAL
28 to 39	GENERAL AVIATION-REGIONAL
19 to 27	GENERAL AVIATION-LOCAL
0 to 18	GENERAL AVIATION-LIMITED

NA = Not Applicable

The linear breaks in the final scores for airport functional level classifications are identified in the matrix to the right. The maximum score that any airport could earn was "70," (14 categories X 5 points maximum for each category = 70 points) and a minimum score of "5". The range for the total score for the National Classification was 40 to 70; the range for the Regional Classification was 28 to 39; the range for the Local Classification was 19 to 27; and the range for the Limited Classification was 0 to 18.

Aviation Demand Classification Definitions

Based on other state system planning efforts, the following definitions were drafted for the six airport classifications:

Commercial Service – An airport with scheduled passenger airline operations

General Aviation - Reliever – A FAA designated reliever airport

General Aviation - National – maintains a consistent and contributing role in enabling the local, regional, and statewide economy to have access to and from the national and global economy

General Aviation - Regional – maintains a contributing role in supporting the local and regional economies and connecting it to the State and National economies

General Aviation - Local – maintains a supplemental contributing role for the local economy

General Aviation - Limited – maintains a limited contributing role for the local economy

These study classifications rank the demand for aviation in the associated cities for existing airports. The classification does not necessarily dictate the future role of the airports within the State Aviation System. In subsequent chapters, each airport will be analyzed with regard to its role within the State Aviation System, identifying airports in proximity to where aviation service is duplicated. The identification of airports within a region where aviation services are duplicated may dictate reclassification to a lower group. In addition, if areas are deemed to be inadequately served, reclassification of an airport to a higher role may be determined necessary to accommodate the needs of Louisiana.

Table 5-2 presents a list of airports alphabetically by the name of the associated city, and classified into the six categories. **Exhibit 5-1** graphically depicts the airports by associated city and classification (*to be provided*).

The next section focuses on the FAA classification system for airports, followed by facility and service standards for these six airport classifications.

AIRPORT REFERENCE CODE (ARC) SYSTEM

In the ARC system, the FAA relates airport design criteria to the operational and physical characteristics of the airplanes intended to operate at an airport. The ARC has two components related to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category; it relates to the aircraft approach speed. The second component, depicted by a Roman numeral, is the airplane design group; it relates to the airplane wingspan. Generally, runways are related to aircraft approach speed, airplane wingspan, and designated or planned approach visibility minimums. **Table 5-3** provides a list of common airplanes with their approach category and design group per FAA standards.

TABLE 5-3
FAA AIRCRAFT CLASSIFICATION STANDARDS

FAA Aircraft Approach Categories		
Approach Category	**Approach Speed (Knots)**	**Typical Aircraft Type**
A	Less than 91	Beech Bonanza, Cessna 150, Cessna 172
B	91 but less than 121	King Air, Citation I & II, Falcon 50
C	121 but less than 141	Lear 25, Gulfstream III, B-727, B-737, B-757
D	141 but less than 166	Gulfstream II and IV, B-747, B-777

FAA Wingspan Design Groups		
Design Group	**Wingspan (Feet)**	**Typical Aircraft Type**
I	Less than 49	Beech Baron 58, Cessna 150, Cessna 172
II	49 but less than 79	Beech King Air C-90, Gulfstream I, Falcon 50
III	79 but less than 118	B-727, B737, DC-9
IV	118 but les than 171	A-300, B-757, B-767, L-1011, DC-10
V	171 but less than 197	B-747, B-777
VI	197 but less than 262	Lockheed C-5A

Source: FAA Design Circular 150/5300.

FACILITY AND SERVICE STANDARDS

Once system airports are grouped into study classifications or functional levels, it is desirable to identify facilities and services that should ideally be available at airports included in the six classifications. It is possible that airports included in or recommended for an increase in their classification in later analyses may, for one or more reasons, be unable to comply with certain facility and service standards. An airport's inability to meet the facility and service standards for its classification does not necessarily preclude that airport from performing that role or function within the system, but will be considered in the analysis of options to meet identified system deficiencies. **Table 5-4** identifies the minimum facility standards for each of the six airport classifications.

TABLE 5-4
MINIMUM FACILITY STANDARDS

AIRPORT CLASSIFICATION	MINIMUM CRITERIA
COMMERCIAL SERVICE, GENERAL AVIATION-RELIEVER, GENERAL AVIATION-NATIONAL AIRPORTS	
ARC:	C-II or Design Aircraft
RUNWAY LENGTH:	75% Large Aircraft at 60% Useful Load
RUNWAY WIDTH:	To Meet ARC
TAXIWAY:	Full Parallel
NAVIGATIONAL AID:	Precision Approach
VISUAL AIDS:	MALSR, PAPIs
LIGHTING:	MIRL , Beacon
WEATHER:	Automated Weather Reporting
SERVICES:	Phone, Restrooms, FBO*, Maintenance, Jet Fuel, 100 LL, Ground Transportation,
FACILITIES:	Terminal, Aircraft Apron, Hangars, Auto Parking
COMMUNICATIONS:	GCO/RCO/ATCT
	*FBO = Fixed Base Operator

MINIMUM FACILITY STANDARDS

AIRPORT CLASSIFICATION	MINIMUM CRITERIA
GENERAL AVIATION-REGIONAL AIRPORTS	
ARC:	B-II or Greater
RUNWAY LENGTH:	100% of Small Aircraft w/ less than 10 passenger seats
RUNWAY WIDTH:	To Meet ARC
TAXIWAY:	Partial Parallel
NAVIGATIONAL AIDS:	Non-Precision Approach
VISUAL AIDS:	PAPIs
LIGHTING:	MIRL, Beacon
WEATHER:	Automated Weather
SERVICES:	Phone, Restrooms, FBO, Maintenance, Jet Fuel, 100 LL, Ground Transportation
FACILITIES:	Terminal, Aircraft Apron, Hangars, Auto Parking
COMMUNICATIONS:	GCO

TABLE 5–4 (CONTINUED)
MINIMUM FACILITY STANDARDS

AIRPORT CLASSIFICATION	MINIMUM CRITERIA
GENERAL AVIATION-LOCAL AIRPORTS	
ARC:	B-I or Greater
RUNWAY LENGTH:	95% of Small Aircraft (NPIAS airports) 75% of Small Aircraft (non-NPIAS)
RUNWAY WIDTH:	60'-NPIAS, 50'-non-NPIAS
TAXIWAY:	Turnarounds & Connectors
NAVIGATIONAL AIDS:	Non-Precision Approach
VISUAL AIDS:	PAPIs
LIGHTING:	MIRL, Beacon
SERVICES:	Phone, Restrooms, 100 LL Fuel
FACILITIES:	Pilots Lounge, Aircraft Apron, Hangars, Auto Parking
COMMUNICATIONS:	GCO

MINIMUM FACILITY STANDARDS

AIRPORT CLASSIFICATION	MINIMUM CRITERIA
GENERAL AVIATION-LIMITED AIRPORTS	
ARC:	A-I or Turf
RUNWAY LENGTH:	Maintain Existing
RUNWAY WIDTH:	50' Paved or 100' Turf
TAXIWAY:	Connector and/or Turnarounds
LIGHTING:	Reflectors or LIRL & Beacon
SERVICES:	Phone, Restrooms
FACILITIES:	Aircraft Apron, Hangars, Auto Parking